

# Plumbing & HVAC

The Voice of Canada's Mechanical Industry

Volume 18 Number 1

January/February 2008

CMX-CIPHEX  
2008  
PREVIEW

## Hearth and Heating Issue

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- Industry must target youth – StatsCan
- New commercial solar incentives
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## Hearth & Heating Issue



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Cover photo: Tom Potocki, front, and Brad David of Broom's Air Conditioning install a fireplace insert. (Photo by Simon Blake)

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# Hot Seat



## Bushwhacked

All too often dramatic changes occur in building codes without the industry becoming aware of the implications until after the fact. Such is the case with the new ventilation section of the National Building Code (Section 9.32.3.8).

A provision that makeup air be brought from outside the house and pre-heated to at least 12°C (54°F) all but bans natural draft furnaces and boilers by making the ventilation requirements difficult to achieve and prohibitively expensive. This new section is so "flawed" that Ontario and B.C. have refused to adopt it. However, in Alberta, it is the law for new installations and retrofits where significant changes to the venting system are required.

The industry was similarly surprised a few years ago when Safe Kids Canada managed to get a provision adopted in the 2005 National Building Code that would require the maximum DHW temperature in the tank reduced to 49°C (120°F) as an anti-scald measure. Never mind the frightening health implications as Legionella disease can survive in water systems until 55°C.

There have been a number of other issues over the years and there will certainly be more as time goes on unless the lack of openness in the code process is changed. When these "surprises" occur, it begs the question: doesn't anyone know what the national code commit-

tees are up to? There is no simple answer to that. There is a public review process. Manufacturers, associations and other groups do have people that monitor code activities and work with code committees.

However, these people are primarily volunteers and dealing with codes is not their primary responsibility. Working their way through pages and pages of documents written in excruciatingly difficult to read code language can be daunting – and can easily end up on the backburner.

If one area of the code process is causing particular concern, another issue might slip by with little attention. I suspect this occurred with the ventilation section, given that every manufacturer and association has been so busy in recent years with the new interpretation of the CSA B149 gas code that requires all plastic venting systems to be certified to ULC S-636 requirements.

The National Research Council, which administers the national codes, needs to find a better way to publicize the changes that its building code committees are considering. It needs to get the word out in plain English (and French) through trade magazines and associations well before the changes are made. The CSA needs to do the same with the standards that it is responsible for.

Currently, the degree of watchfulness

and technical knowledge required to keep up to date is onerous. That needs to change. Code officials have to make it a priority to ensure that the industry and the public are well informed on any proposed code changes prior to their adoption.

## Welcome



Martyn Johns

Plumbing and HVAC Product News is pleased to welcome Martyn Johns to the position of National Sales Manager. Previously an account manager

with sister Newcom Business Media publication *Today's Trucking*, Martyn brings considerable business and trade experience to his new role. Prior to joining Newcom, Martyn ran a company that supervised painting contractors, working with them on marketing, good business practices and, as Martyn puts it, "every aspect of their business except painting."

Please join us in welcoming Martyn to our team!

# Plumbing & HVAC

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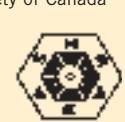
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# Industry News

## Good news, bad news

*Contractor rights group finds success comes with a big bill*

By Simon Blake

A remarkably successful year has put the Ontario HVAC Coalition deep in a financial hole. Victories in two major battles with Enbridge Gas Distribution left the contractor rights group with a \$105,075 deficit for 2007 thanks to legal bills and other related costs.

But it was worth it, remarked Coalition Chair Rob Jutras of Reliance Home Comfort. Standing up for small and medium-sized HVAC contractors on access to the Enbridge bill for marketing purposes and battling the Enbridge Energy Link dealer program were "at the very heart of why the Coalition was created," he told members at the group's annual meeting in Woodbridge, Ont. Nov. 27.

The old mantra that "truth is stranger than fiction" could easily be applied to some of the Energy Link testimony at the Ontario Energy Board (OEB) hearing. Coalition lawyer Jay Shepherd uncovered something called "Project Atocha" during cross-examination of Enbridge witnesses, reported Martin Luymes, case manager for the Coalition. This turned out to be "code for sunken treasure" – something that Enbridge was perhaps trying to recover after having sold the business built on the back of its previous dealer network to Direct Energy some years ago.

(The name comes from the Spanish sailing ship Nuestro Senora de Atocha or Our Lady of Atocha. It sank off the Florida Keys in 1622 while carrying one of the largest treasures ever lost at sea. Lost, that is, until divers found the ship along with gold, silver and jewels valued in the millions of dollars in 1985.)

### Nipped in the bud

The Energy Link story isn't quite as exciting. It collected leads from Enbridge natural gas customers and forwarded them to HVAC contractors enrolled in the program. While that may have sounded innocent enough, "We were more concerned about where the program might go next," said Luymes. The Coalition feared that Energy Link could become a full-blown dealer network that would allow Enbridge to "regain control over the HVAC industry."

With support from consumer groups, it argued in front of the OEB that such an initiative would harm both the industry and consumers while going against past OEB decisions that required a separation between the gas utility and gas appliance sales/service.

The Coalition had a number of expert witnesses on their side, all of them successful HVAC contractors. Roger Gochmal, Atlas Air ClimateCare, Oakville, Ont.; Mike Latrelle, Holmes Heating Inc., Kanata, Ont.; Nancy McKeraghan, Canco ClimateCare

*continued on page 8*



Watts' Andrew Clark, right, chats with show visitors.

## All-trades show grows

Canada's largest all-trades construction show continues to grow. The 19th edition of Construct Canada drew 23,461 people to the Metro Toronto Convention Centre (South Building) Nov. 28-30, up six percent from 2006.

Every year the show draws more mechanical industry exhibitors, but they can sometimes be difficult to find among exhibitors offering everything from paving tiles to pest control in the five shows that occur under the Construct Canada banner.

Newcomers Viessmann Manufacturing and Bardon Supplies along with Delta Faucet, for example, could be found in the Property Management Exposition & Conference. Other plumbing manufacturers like Kohler and Moen exhibited in the

Design Trends show. Zurn, Watts, Uponor, Judo and many others could be found in the actual Construct Canada area. Still others exhibited in the Homebuilder and Renovator Expo.

This year's show marked a growing interest in everything that is green and environmentally viable, from systems to products and technologies that lead to environmentally advanced buildings, reported show spokesperson Annette Borger.

She added that feedback from show attendees was positive with many remarking it was the "best show to date."

Planning is already underway for the 2008 event. It will include a number of special features to celebrate the 20th anniversary Dec. 3-5 at the Metro Toronto Convention Centre.

## Unlicensed workers draw \$10,000 fine

Ontario officials take a dim view of those who perform HVAC installations without the correct licenses. A company received a \$10,000 fine Dec. 19 after pleading guilty in a Kitchener, Ont. provincial court to using uncertified employees to install heating vents.

The Technical Standards and Safety Authority charged John DeClute of Scarborough, Ont. and a Toronto-based numbered company, 398701 Ontario Ltd. (operating as Structural Restoration), following the discovery of improperly connected vents and furnaces clogged with insulation at a multiple-unit residential complex at 400-440 Strasburg Road in Kitchener.

Property management discovered the problems in October of 2005. Upon investigation, TSSA determined that the

company "had not taken reasonable precaution of ensuring any of its agents or employees held a gas technician certificate as required by regulation."

John Marshall, director of TSSA's Fuels Safety Program, said he hopes the fine sends a clear message to both the public and industry that the authority is intent on ensuring safety in the use, handling, transportation and storage of fuels. However, he added that TSSA prefers to work with industry to ensure these sorts of incidents don't occur.

"Prosecution for non-compliance is an important tool of enforcement. However, working with stakeholders toward compliance and cooperation, often in proactive partnership, is the cornerstone of fuels safety," he remarked.

The company must also pay a \$2,500 "victim surcharge."

## In Brief

### Manitoba low-income energy efficiency program

Manitoba Hydro has launched an energy efficiency program aimed at low-income households that may not be able to afford to utilize existing federal and provincial energy efficiency retrofit programs. Manitoba homeowners will be able to finance the installation of a high efficiency gas furnace for up to 15 years on their utility bills. "The monthly energy savings should more than cover the loan payments and allow customers to increase the comfort of their home with no financial burden," reports Bob Brennan, CEO and president, Manitoba Hydro. Call 1-888-624-9376 or visit [www.hydro.mb.ca/lowerincome](http://www.hydro.mb.ca/lowerincome) for more information.

### Record sales year

Sales of plumbing and heating products hit a record \$4.9 billion in 2007, according to figures released by the Canadian Institute of Plumbing & Heating. That's a five percent or \$222-million increase over 2006. However, the December numbers were down three percent from the same month in 2006. HVAC was up 7.9 percent for the year, hydronic heating is up 9.3 percent, plumbing is up 7.7 percent and municipal waterworks is up 7.8 percent. Pipes, valves and fittings declined 8.4 percent during 2007, reports CIPH. The Prairies and western Ontario were up 11 percent, B.C. is up almost seven percent, while Ontario and Quebec saw little increase at 1.9 and one percent respectively. The Atlantic provinces were down 2.3 percent for the year. In 2008, the Canadian Construction Association is predicting a non-residential construction increase of five percent while residential will be relatively flat at 0.3 percent. A summary of the CCA forecast can be found at [www.cca-acc.com/factsheet](http://www.cca-acc.com/factsheet).

### Alta. retrofit permit

Effective April 1, Alberta Safety Services will require permits be drawn for the change of all appliances including hot water heaters and boilers. If the new appliance requires a change to venting or piping, contractors must also meet the stringent requirements designed to reduce the chance of depressurization in the 2006 Alberta Building Code. Call 1-866-421-6929 for more information.

### Energy Star boost

A new Energy Star specification for gas furnaces currently under

*Continued on page 11*

# Industry News

## Industry needs to focus on youth, says StatsCan

By Ron Shuker

The industry must target younger people if it hopes to boost the number of individuals entering trade apprenticeships, reported Statistics Canada in a study released last fall.

The industry needs to promote the option of apprenticeship to high school students at the age of 15 because that is when university or college beckons – or not, the September study titled *Youth in Transition* suggests. At that age the boys' weaker (than girls') academic performance and study habits began to deter

them from going to college or university.

An apprenticeship study released in November by Statistics Canada shows that, not surprisingly, numbers of individuals entering the trades are up substantially.

The study, which covers the period up to 2005, showed that apprenticeship registrations increased in the major trade groups in 2005, with the largest gains in the building construction trades, thanks to Canada's construction boom. In 2005, total registrations hit

293,835, up 9.7 percent from 2004, the biggest single-year increase since 1995. The building construction trades saw 68,705 people registered for training in 2005, up nearly 8,100 from 2004. Registrations also rose by 5,700 in the metal fabricating group, and by just over 4,000 in the electrical, electronics trades. Completions of apprenticeship training hit a high of 20,555 in 2005, up 4.3 percent from 2004. Four trades accounted for 75 percent of completions: the metal fabricating trades had 23.0 percent of the total, the highest proportion, the motor vehicle and heavy equipment trades group was at 21.7 percent, the electrical, electronics trades at 18.3 percent and the building construction trades at 14.4%.

### More female apprentices

The registration of women in all major trade groups has increased from 1992 to 2005, but the numbers are still relatively low, reports Statistics Canada. It reported a 35 percent rise in women registering: from 770 in 1992 to 2,035 in



The industry needs to focus on youth for its apprenticeship requirements, says Statistics Canada.

the building construction trades in 2005.

Across all trades, 2,225 women completed apprenticeships in 2005. Interestingly, the oldest women, with an average age of 33, were registered in the building construction trades group.

## Coalition...

*continued from page 7*

Heating & Air Conditioning, Newmarket, Ont.; and Glen Leis, OZZ Corp., Concord, Ont. testified before the board. Paul Messenger, A1 Air Conditioning & Heating, Oakville, Ont., provided a witness statement.

Their testimony proved a real eye-opener for board members and consumer groups that hadn't previously had an opportunity to speak with people who actually do heating and cooling system installations.

In the end, the OEB ruled that there was no evidence that consumers were poorly served by the existing HVAC market, thus requiring Enbridge to intervene, and that the Energy Link program promoted increased use of natural gas, counter to the utility's own conservation efforts.

And while it was an important victory for the HVAC industry, "most people gave it a bit of a shrug," remarked Luymes. But it marked a new direction for the Coalition.

"This is the first time the HVAC Coalition has proactively addressed an issue before it became a problem..."

However, the Coalition got stuck with the cost when the OEB denied its request for cost recovery. The group appealed on the grounds that "it was a public interest decision and therefore should be reimbursed... If not for the Coalition, it would not have been raised," added Luymes to a room that not only included contractors, but Enbridge representatives in the Toronto chapter of the Heating, Refrigeration

and Air Conditioning Contractors of Canada (HRAC). Unfortunately, the Coalition learned that the OEB denied the appeal a few days after the meeting.

### Open bill

The other major dispute, previously reported in *P&HVAC*, ended the exclusive right of Direct Energy to insert marketing material with the Enbridge gas bill.

It could have gone one of two ways, said Luymes. Many in the industry and possibly the majority of consumers would have preferred a "naked bill" with no marketing material.

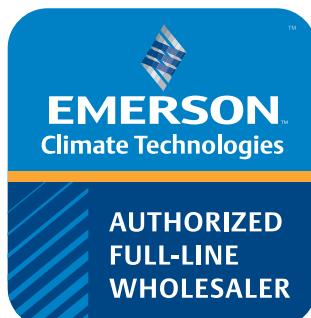
However, the OEB adopted a second option that required Enbridge to allow marketing material from other companies. A formula was established that ensured the bill wouldn't be lost amongst the advertising, prevented a few large players from dominating and prevented advertising from being placed in the envelope when the bill included important safety or regulatory information.

So where does the Coalition go from here? "Our immediate need is to raise over \$100,000," admitted Jutras. "We are confident the HVAC Community will support the cause," he added.

The financial pressures have done little to dampen the group's determination.

"Our mandate is to keep a level playing field for all. We will keep up the fight to ensure that we have a very competitive and open marketplace," said Jutras.

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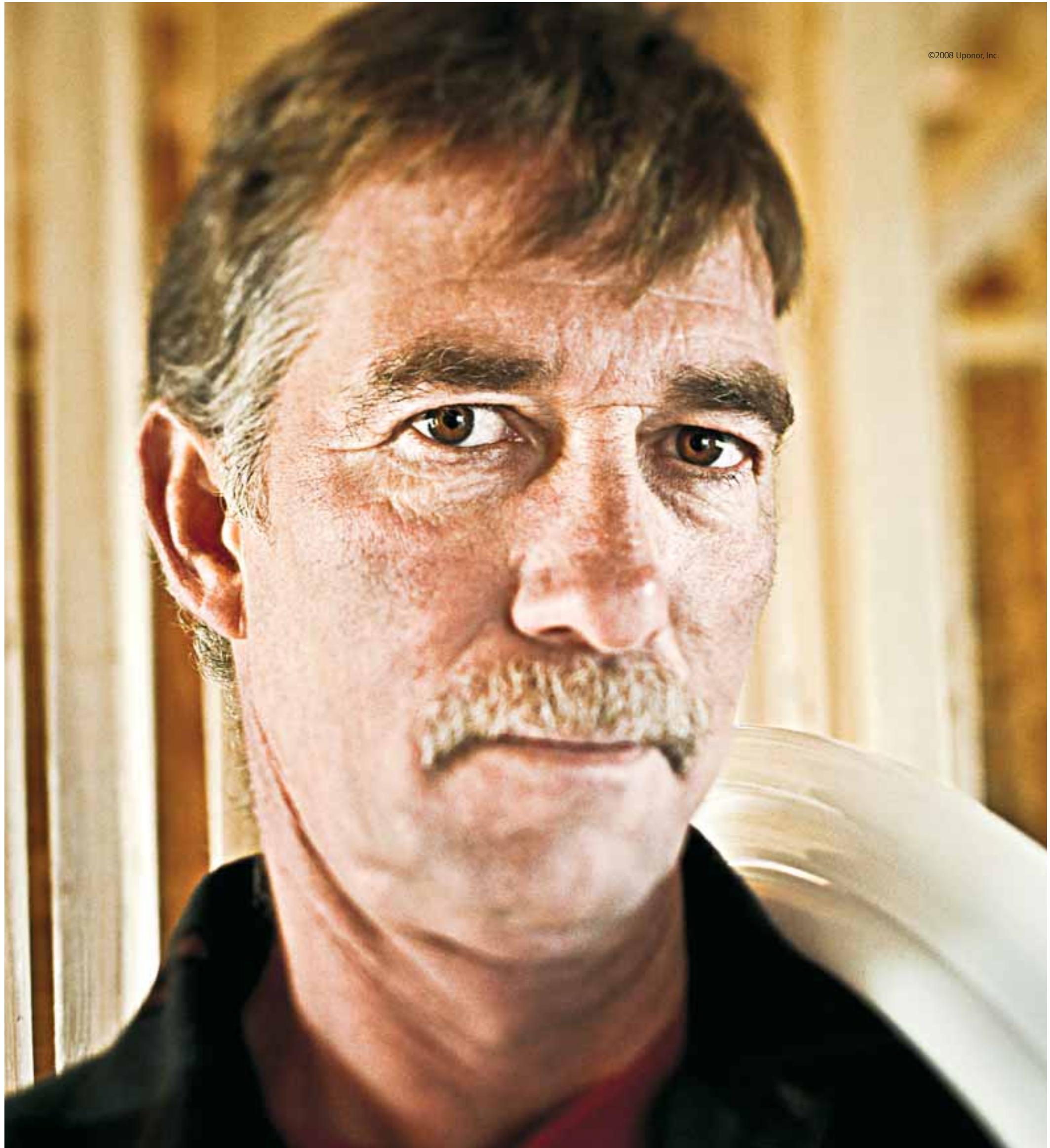
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# Industry News

## In Brief

Continued from page 7

discussion will require an annual fuel utilization efficiency (AFUE) rating of 92 percent or higher effective Oct. 1, reports the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI). The qualifying level for oil furnaces will move to 85 percent on the same date.

### Furnace motor standard

The Canadian Standards Association plans to develop a standard for forced air furnace fan/motor performance efficiency, reports HRAI. Electricity consumption is not currently part of AFUE ratings.

### Roadshow success

CIPHEX Roadshow "mini-trade shows" drew over 1300 visitors in five cities last fall, reports CIPH. Successful shows were held in St. John's, Nfld, Winnipeg, Saskatoon, Regina and Vancouver. Ninety-eight exhibitors displayed their products. Visit [www.ciph.com](http://www.ciph.com) for more information.

### Trane sold

On Dec. 17 Ingersoll-Rand Co., based in Bermuda, announced a \$10.1 billion deal to buy New Jersey-based Trane, one of the world's largest manufacturers of HVAC equipment. Trane recently sold its American Standard kitchen and bath business but is retaining the name for its heating and air conditioning appliances. The deal is expected to close in the spring.

### Johnson acquires Skymark

Johnson Controls, Inc., Milwaukee, Wisconsin, has acquired Skymark International, Inc. an indoor packaged HVAC products manufacturer headquartered in Ajax, Ont. Specific terms of the agreement were not disclosed.

### Organizations merge

Members of the Air-Conditioning and Refrigeration Institute (ARI) and the Gas Appliance Manufacturers Association (GAMA) voted to merge the two trade organizations in December. The merged association became the Air-Conditioning, Heating and Refrigeration Institute (AHSRI) on Jan. 1, headquartered in Arlington, Va.

### Clarification

After the November/December issue of *P&HVAC* went to press we learned that Granby Steel Tanks had adopted an inspection port with gauge glass to monitor leaks between the walls of their new double-bottom tank, not the vacuum gauge system reported in our article.

## Federal solar incentives

By Bruce Nagy

Natural Resources Canada has launched a four-year incentive program designed to drive industrial, commercial and institutional building owners towards solar air and water heating systems.

The federal program provides \$80,000 per installation, which can represent up to 25 percent of the cost of approved systems. This rises to 40 percent in regions qualifying as "remote" and to 50 percent for construction projects by municipalities and non-profit groups.

In Ontario and Saskatchewan, the

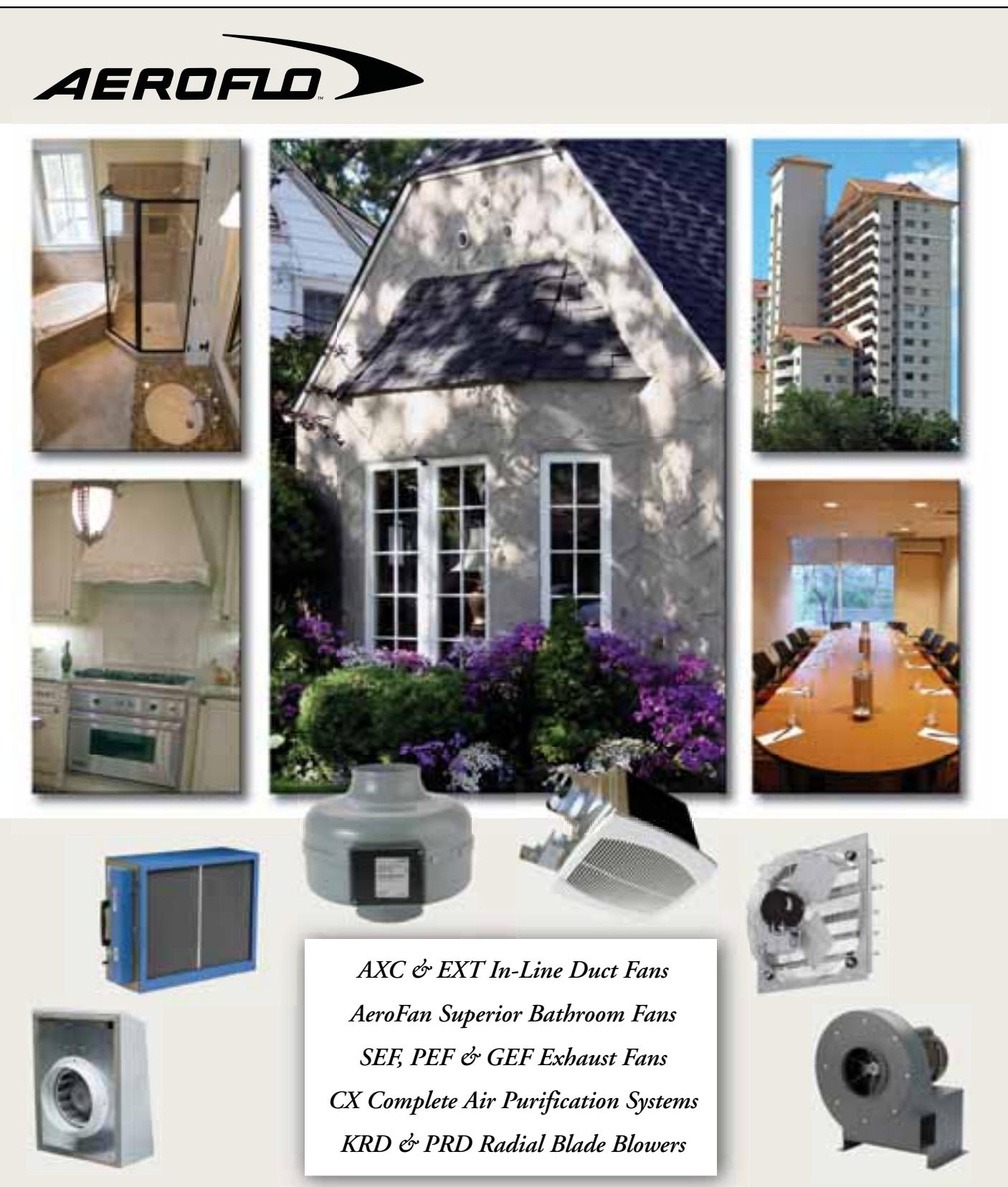
incentives will be matched by provincial governments, creating a total of \$160,000 per installation that, in theory, can represent up to 100 percent of the cost for a municipality or non-profit group in a remote area. Corporate maximums for multiple installations are \$4 million in these two provinces, \$2 million elsewhere. More information can be found at [www.ecoaction.gc.ca/ecoenergy](http://www.ecoaction.gc.ca/ecoenergy).

Natural Resources Canada is also funding 90 percent of costs for certification and testing of packaged solar water technologies. The goal is to increase, by 2011, the selection of per-

formance-tested and CSA certified solar heating systems to at least 12 types from the few that are now approved.

### Energy saving software

The Ministry also recently released the latest version of its free RETScreen energy efficiency software. It includes financially viable clean power, heating and cooling technologies, and energy efficiency measures. The new version also includes access to 22 years of NASA global climate data. It now comes in 26 languages and can be acquired at [www.retscreen.net](http://www.retscreen.net).



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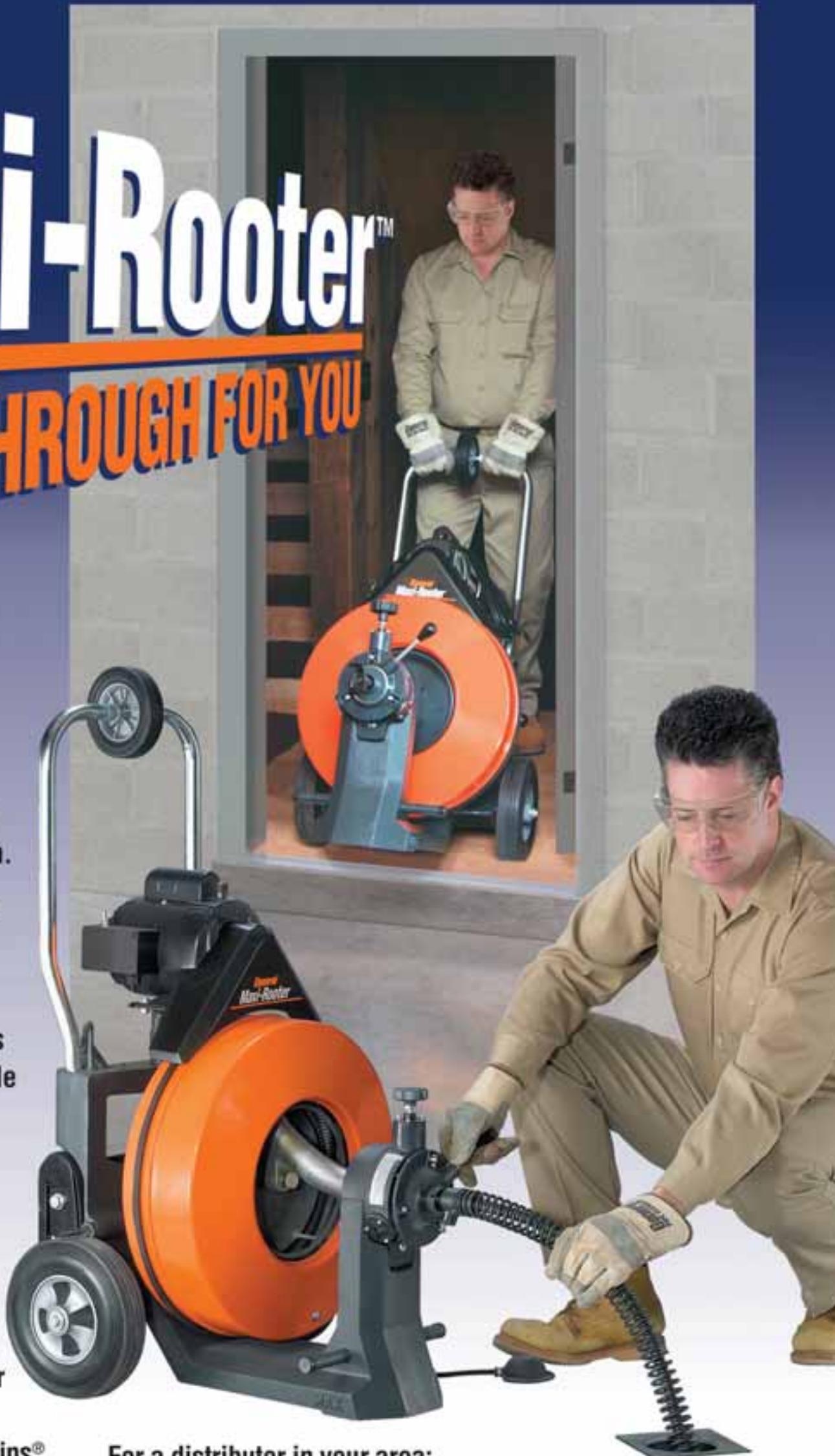
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## Letters

# Success on the more difficult path

### Editor's note:

This is an abbreviated version of a letter received by Shop Management columnist Ron Coleman.

### Dear Ron:

It was a pleasure to meet you (at a seminar) after having ready many of your articles in *Plumbing & HVAC magazine* as well as some of your books.

The book that stands out foremost in my mind is *You Charge What Per Hour?* I firmly believe that little book played a key role in the rebuilding of our business in the fall of 1999 after we declined a huge contract with one

of the largest home service companies in Ontario. We had been hand-fed work for over 25 years by the gas utility. During that time we grew our company from a one-man sub-contractor to a company with 31 employees. The closer we got to the time of signing the new contract, the more convinced I became that it would lead to the eventual demise of the company. Of course, once I declined the contract we downsized to six employees along with my husband and I. My daughter convinced me to spend the few dollars to purchase that little book and it confirmed what I knew in my heart had to

be done. I knew that we had to strive not to be the cheapest, nor compete with the many middle of the road companies, but we had to reach the elite customers by offering quality products and excellent service at a premium price.

That decision was easy; convincing our loyal employees the way to survive was by increasing prices, not lowering them, was more difficult. Without your book, I'm not so sure I would have been able to explain the concept in a way the employees would have been able to understand and trust. Once they understood the concept, they were quite

comfortable working to achieve the common goal of building the business. Now, eight years later, we have survived the downsizing and have doubled the number of employees. The business is growing and is more successful each year.

Many thanks for understanding the heating and air conditioning business and sharing your knowledge in a way that is so helpful to anyone who takes the time to read your books and articles and attend your seminars.

**Marie MacKay**  
**MacKay Heating & Cooling**  
**St. Catharines, Ont.**

## Technicians must see the big picture

### Editor's note:

Hydronic heating columnist Roy Colver received the following letter.

### Dear Roy:

I try to read all your articles published in *Plumbing and HVAC* and always find them of great interest.

My background has primarily been with air source heat pump system design and, as your latest article indicated, there is more and more interest in hybrid systems. As a mechanical engineering technologist with both formal and HRAI training, my focus has been with on forced air duct design, system selection, etc.

Yet with hydronic hybrid systems I have had to rely on others for design and installation. I have been frustrated with the hydronic guys not understanding what I am trying to accomplish, which most likely is a lack of training on both my part and theirs. Their design work has been provided through the wholesalers, which leads me to believe that they do not really understand the engineering processes behind the design.

I am responsible to my customer to provide the best system that they can carry in the budget and ultimately I end up taking the heat when something goes wrong. Therefore I am searching for non-manufacturer training programs that I can use to develop and design these systems with confidence. The last hydronic training that I was able to get my hands on was labeled "modern hydronic heating" and was about as out of date as shovel-fed coal boilers.

**Mark F. Lennan, CET**  
**Halifax Heating Residential Inc.**

### Roy responds:

Hi Mark,

I totally agree with you – it can be frustrating finding adequate training of the higher quality you are after. I have some suggestions for you to investigate:

The Northern Alberta Institute of Technology in Edmonton has developed a certification course for hydronics designers and installers. Visit [www.nait.ca/program](http://www.nait.ca/program).

Also you may want to check out [www.hydronicpros.com](http://www.hydronicpros.com) and [www.radiantpanelassociation.org](http://www.radiantpanelassociation.org).

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Circle Number 113 for More Information

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# Style versus efficiency

*Fireplace manufacturers try to balance customer and government demands*

By Simon Blake

**G**as fireplace manufacturers have developed more energy efficient models in part because of prompting from Natural Resources Canada (NRCan) and its EnerGuide for Gas Fireplaces program. But do consumers really care?

Today's gas fireplace is a showpiece for the home. The trend is towards larger fireplaces with an aesthetically pleasing "wood-like" flame. But "the bigger it gets the less efficient you can typically make it," noted John Vukanovich, vice president of Selkirk Canada. "To get that amount of flame and make it look nice, you need big Btu numbers. You are getting some heat out of there ... but most of it goes out the chimney."

This has been a considerable change since gas fireplaces were introduced about thirty years ago. "Our original approach to gas fireplaces (in 1981) was not the decorative side; it was more the heating side – it was more a gas-fired wood stove..." reported Martin Miles, product director for Miles Industries of North Vancouver, manufacturer of the Valor brand in Canada.

Other key trends in recent years include the "clean-face" design along with new shapes such as "portrait style" fireplaces that are built right into the wall, often in non-traditional locations like the bathroom.

Nevertheless, fireplaces continue to fulfill an important function as a heating device, offering a form of zone heating. A fireplace in the living or recreation room allows the homeowner to maintain that room at a comfortable temperature without having to maintain the entire house at that level.

### The technology

While consumer demand continues to push the aesthetics in new directions, manufacturers continue to develop the technology. Tighter homes are pushing

the move to direct venting to the point where Mike McPhee, operations manager for Broom's Air Conditioning in Burlington, Ont., reports: "We do nothing but direct vent in basement applications."

The push for energy efficiency is making electronic ignition more common, although manufacturers still have reservations. Remote controls are available for many models. New gas valve designs allow the burner to be modulated over a wide range.

In *P&HVAC*'s last look at natural gas fireplaces two years ago, we predicted

"You've got governments offering incentives to the public to move them to electronic ignition but, on the other hand, you've got the industry that knows there can be startup venting issues in cold weather."

that the standing pilot light would quickly disappear. Not so, say manufacturers. "We're still using them although we see more and more of a demand for electronic ignition," reports Dana Moroz, manager of technical services for Wolf Steel, Barrie, Ont., manufacturer of Napoleon Fireplaces.

Two factors mean that standing pilots will likely be around for some time. Adding electronics to a fireplace adds cost. "We see (electronic ignition) in green homes, but for the most part the consumer is looking for the best price," says Moroz.

Secondly, the small amount of heat provided by the standing pilot improves fireplace startup, reported Miles. "You've got governments offering incentives to the public to move them to electronic ignition but, on the other hand, you've got the industry that knows there can be startup venting issues in cold weather." As a result, some electronic ignitions are designed so that they can be switched to standing pilot mode when



Today's gas valve technology modulates the flame over a wide range.



HVAC mechanics Tom Potocki, front, and Brad David of Broom's Air Conditioning, Burlington, Ont. install a fireplace insert.

outdoor temperature drops.

A new technology called 'pilot on demand' may offer a solution. Basically this is an electronic ignition that lights the pilot that in turn lights the burner. The standing pilot stays on during the actual use cycle, said Miles.

Most electronic ignition models include a battery backup because of the "ice-storm effect." A gas fireplace will continue to operate if the power goes out, as it did when many residents in eastern Ontario and much of Quebec were left without power for days – in some cases more than a week – following an ice storm in 1998.

### Keeping track

Today some manufacturers offer as many as 40 different fireplace models. This can make it difficult for the contractor to keep up to date or to offer more than one or two product lines.

"It used to be that dealers would offer a choice of three or four different brand names ... now it's almost too complicated to do that," says Vukanovich. It's imperative that contractors and dealers take advantage of any available manufacturer training and attend trade shows where the fireplaces are being shown, he says. The bottom line is to focus on a particular line of products and get to know them really well. Many



The typical homeowner's goal is a comfortable fire with a nice flame.



Both combustion air and exhaust use an existing chimney on this direct vent application.

homeowners have already done their research online and are confused by the many choices.

"They need the contractor to help them sort that out," says Vukanovich. "The clearer you can communicate to the homeowner what it is they are going to get, how it's going to look, how it's going to work and how much heat is coming off it, the fewer problems you are going to have down the road."

Using the internet is quickly becoming a must. "You can get by without it, but you can't excel at the business," he says. Some manufacturers offer an online tool that allows the dealer and customer to sit down and design the fireplace system. "In effect, you are getting a custom solution using off-the-shelf components."

Selling fireplaces is different from selling other HVAC equipment, noted Miles. People buy fireplaces out of choice rather than necessity. Because they are very visible and a source of pride in the home, people are willing to pay more for a good product and a good installation.



Some of today's fireplaces can be controlled with a remote.

#### The installation

As with any piece of HVAC equipment, every installation of a gas fireplace or insert offers its own challenges. When replacing a wood fireplace with a gas unit, the first step is to assess the existing installation and chimney to determine what needs to be changed. A chat with the homeowner will often reveal problem areas, says McPhee. "They might tell you that it never did draft properly... If anything is not up to spec, it has to be addressed. Following the gas code is still paramount."

HVAC contractor Brian Baker, Custom Vac Ltd., Winnipeg, expects the market for gas fireplaces will remain strong. Their ease of use makes them a popular choice for the majority of homeowners. "When you've got to haul and pile wood and all the rest of it ... wood is not getting any cheaper to buy or to actually go and bring back and store, and then you've got mice around the house ... For most consumers, gas or oil or electric is the way to go."

## Energy efficiency

While energy use may not be a top priority for many fireplace customers, manufacturers, Natural Resources Canada (NRCan) and Canada's national fireplace organization – the Hearth, Patio and Barbecue Association of Canada (HPBAC) – have done considerable work to rate gas fireplaces for efficiency.

A new program, EnerChoice for Gas Fireplaces, requires that all gas fireplaces, stoves and inserts sold in B.C. be labeled with their efficiency numbers. Similar to the Energy Star program for HVAC equipment, it is likely to be adopted by other provinces.

The top 25 percent in efficiency in the federal EnerGuide for Fireplaces rating system for each category – fireplaces, inserts and free-standing stoves – qualify for the EnerChoice mark. The fireplace efficiency rating (FE) is established in tests mandated by the CSA P.4 standard. Currently, fireplaces must be at least 62.4 percent efficient, free-standing stoves must achieve 66 percent or better while inserts must be 61 percent. Gas logs are not currently included. "If a person is choosing a product for heating rather than just for aesthetics, they would be well advised to choose an EnerChoice product," said HPBAC executive director Tony Gottschalk. Visit [www.enerchoice.org](http://www.enerchoice.org) for more information.

However, the CSA standard remains a contentious issue among manufacturers. Many are less than thrilled about the steady state testing required for the P.4 efficiency rating, arguing that it doesn't reflect how a fireplace is actually used. Homeowners turn the gas fireplace on and off as required, unlike a furnace that runs throughout the heating season.

And while fireplaces are sized by Btu/h, the highest Btu/h fireplace won't necessarily put the most heat into the room. If four fireplaces are rated at 40,000 Btu/h, the one with the highest EnerGuide number will generally create the most heat while achieving the best efficiency. But one has to be careful in the pursuit of higher efficiencies, notes Moroz. "The quest for higher efficiency may result in the fireplace being more off than it is on, so balancing the size of the fireplace and the heat output are important considerations to maximize the enjoyment of spending an evening by the fire."

The EnerGuide fireplace efficiency list can be found at both [www.hpbacanada.org](http://www.hpbacanada.org) and on the NRCan site at <http://oeo.nrcan.gc.ca>.

HPBAC took over management of the EnerGuide for Gas Fireplaces program from the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) in 2006. One of the group's key priorities in 2008 is to get more manufacturers involved, reported Gottschalk. For more information, visit the HPBAC web site or call 1-800-792-5284.

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Circle Number 114 for More Information

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Circle Number 115 for More Information

# Heating

## Product Profile

### Wood/oil furnace earns Energy Star rating

The CL 86/96C combination wood and oil furnaces from Newmac are now Energy Star rated with an efficiency of 83 percent AFUE when operating on oil.

This model features a number of unique features aimed at energy conservation. There are separate combustion chambers for wood and oil with automatic switching between the two, with twin blowers and separate thermostats.

Users typically set the wood thermostat at a higher temperature than the oil thermostat, noted Tony Comeau, P.Eng, technical marketer for Newmac Manufacturing, Debert, N.S. Wood is burned without grates for better efficiency.

An all-welded steel heat exchanger is supplemented by a secondary heat exchanger for maximum heat transfer. A flame retention oil

burner offers quiet efficient operation. (These units are also available with a power gas burner.)

Pre-heated combustion air, introduced by a thermostatically controlled forced draft system, is partially responsible for the high efficiency this unit achieves. A "curtain of air" prevents smoke from coming out the fire door when the unit is being charged. The blower section can be mounted on the left or right side. The electrical harness is pre-wired for easy installation

Newmac multi-fired units are built under strict ISO 9001 standards to ensure a high level of quality control. Oil output is 86,000 to 96,000 Btu's while the average output on wood is 100,000 Btu/h.

There are a number of maintenance friendly features including wide flue passages and large firebox door for easy cleanout along with



Newmac has brought a new level of efficiency to combination wood/oil furnaces.

disposable filters. (Cleaning tools are included.)

The high price of oil is making wood/oil combination units popular with homeowners. However, like any wood-burning appliance, obtaining "good dry seasoned wood is half the battle," notes Comeau. He adds that most homeowners go through a learning curve over the first year both in operating the furnace and in finding a reliable wood supply.

**Newmac Mfg.**

**Circle no. 300**

## Job site heating

The energy-efficient HD-7.5 and HD-3 indirect heating systems from Munters are designed to improve workspace environments and reduce fuel consumption and heating costs. They are self-contained with an indirect fired heat exchanger designed to keep products of combustion and moisture separate from conditioned air and a process air blower to allow for single-point power and duct connections.



**Munters** **Circle no. 301**

## Efficient packaged units

New Trane quiet XL16c packaged units are ENERGY STAR qualified, rated as high as 16.6 SEER. Features include a two-stage compressor, variable-speed blower motor and excellent airflow with

exceptionally low sound levels. This unit can be mounted horizontally or vertically with easy-to-reach electrical and gas connections on the right side.

**Trane** **Circle no. 302**

## Efficient commercial split

The S-Class SSB/SPB line of commercial air conditioners and heat pumps from Lennox are designed to help create a better indoor environment while reducing energy bills. They use R-410A refrigerant to achieve efficiency ratings up to 16.5 SEER and 8.5 HSPF. They are ENERGY STAR qualified. A two-stage compressor reduces temperature swings while providing the right amount of cooling and dehumidification.

A louvered panel design allows quick, easy access to interior components from all sides.

**Lennox** **Circle no. 303**



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**Circle Number 116 for More Information**

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# Hot Water Heating

## Controlling hybrid hydronic systems

By Roy Colver



In discussing hybrid hydronic systems last issue, I said I would put together another article that would go into some depth about the pitfalls and tricks in designing trouble-free residential hybrid systems. As it turns out, I am going to have to write more than one.

Proper control of newer systems seems to be the main thing that gets messed up in the design process. Piping details are a close second, with many people missing some significant details because they are basing their designs on how they have done things in the past. But how different are the new hybrid systems?

Fig. 1 is a simplified drawing of a traditional high temperature baseboard system with notes on how things are controlled. Keep in mind, that there are many components not shown on this drawing. Most illustrations strive to focus on a few salient points and are not designed to be engineering drawings. So please don't try and design a system based on magazine graphics.

Compared to most systems we now work with, this is about as easy as it gets. We have a whole house controlled by a single thermostat. It uses a high temperature, atmospheric natural gas boiler – not uncommon just a few years ago.

Now I don't want to trash this type of system, because if the radiation is sized precisely to the room-by-room heat loss, and every radiator flow is properly balanced, these systems can deliver comfort and satisfaction, and operate almost trouble free for many years. The main issue today is that the homeowner wants more. They want to save energy. They want to warm the floors. They want unlimited domestic hot water. They want every room to have its own thermostat. They want air conditioning and ventilation.

They want a modern hybrid system. Can you deliver?

### The modern system

Fig. 2 is trying to convey far too much information all at once, but it serves to make an important point. It is really the simplest common hybrid system I can think of, yet the number of details to

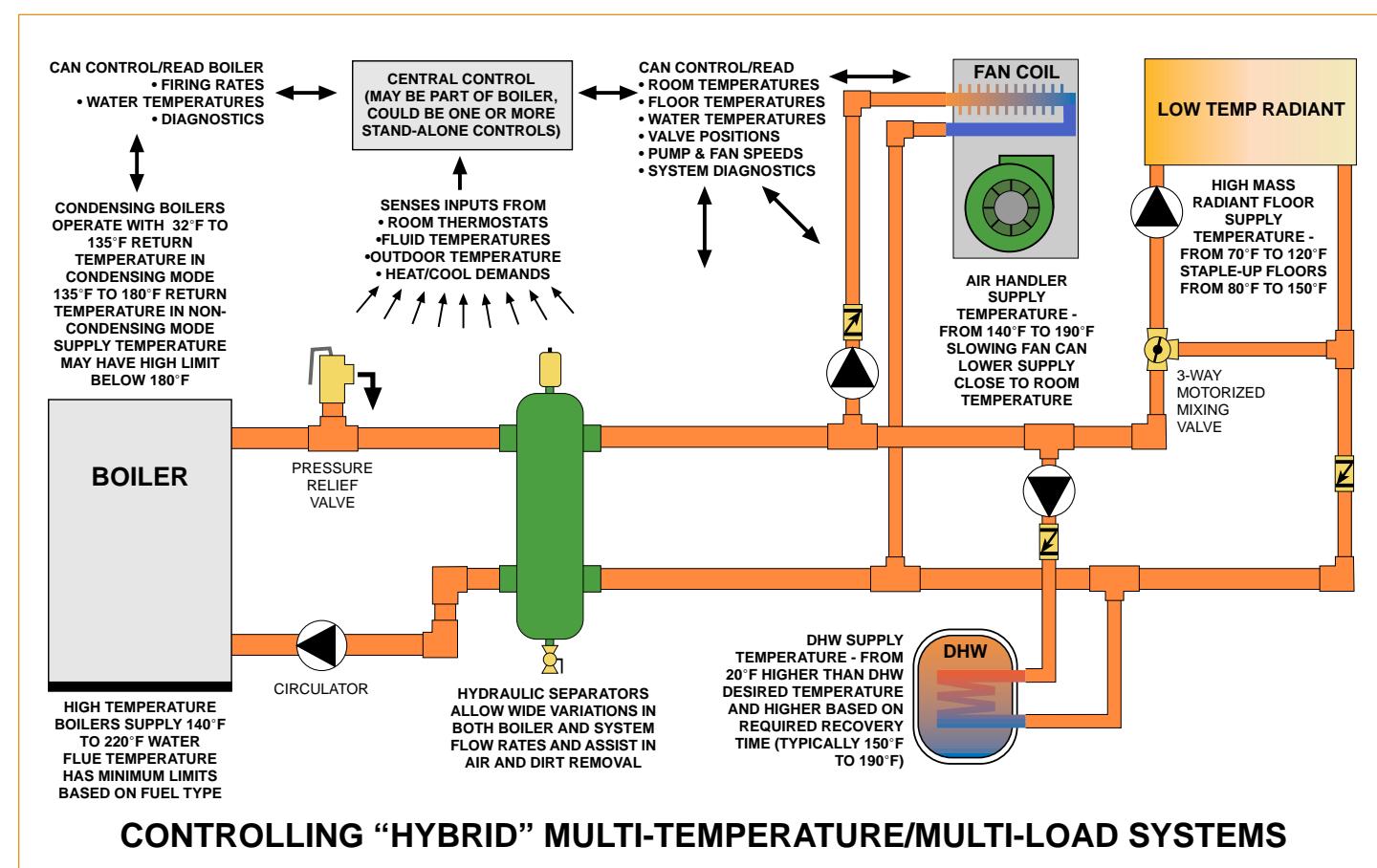


Fig. 2: Even a simple common hybrid system is complex.

consider increases exponentially with every additional component and function added. The "standard" boiler 30 years ago in most areas was a floor standing, cast iron, high-temperature boiler. You ran the boiler hot, because you had to or it would die.

Today, we are seeing the ascendancy of condensing boilers with variable firing rates, pre-mix burners, many of which mount on the wall. They vent with plastic, have their own embedded, computerized controls, and can run at pretty much any temperature you need. They open up a whole bunch of possibilities we never had before.

Simple hybrid systems need not be overly complicated and can be successfully built using basic components. On-off thermostats, relays, stand alone controls and off the shelf equipment can be matched with very satisfactory results by people who know what they are doing,

to mix-and-match stand alone controls with equipment that has built-in control capabilities. It is really important to list everything you want your system to

Another solution would be to operate the different loads in sequence, giving priority to the critical loads like DHW and the fan coil. Modern computerized controls make this relatively easy, although I have seen it done with relays and switches.

When we have a need for air conditioning, we also have to shut off the heating system – or maybe not. Some customers want to have warm tile floors even while cooling the air. Careful consultation with the customer is important in the design stage to determine these details. You may need floor sensors and

sophisticated thermostats to accomplish some of these tasks, but the good news is that stuff is fairly easy to come by these days.

The options available in controlling these kinds of systems are almost unlimited, and the best advice I can pass on is to find a boiler or control manufacturer who can assist you in the design process. Work closely with them to develop your plan of attack and learn some of the finesse required to build a superior system. By limiting your choices and working with experts who can guarantee everything (boilers, pumps, valves, controls, etc.) will work together in an efficient way, you greatly increase your chances of success.

Roy Colver operates Mechanical Systems 2000 in Calgary. He can be reached at [royc@ms-2000.com](mailto:royc@ms-2000.com).

The number of details to consider increases exponentially with every additional component and function added.

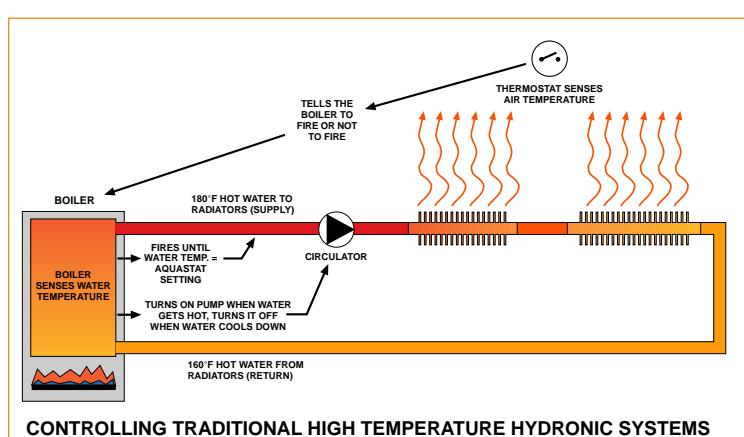


Fig. 1: Controlling traditional high temperature systems.

but in my experience, those same people soon see and understand the advantages of the newest in control and equipment technology.

Serious control conflicts can arise when trying

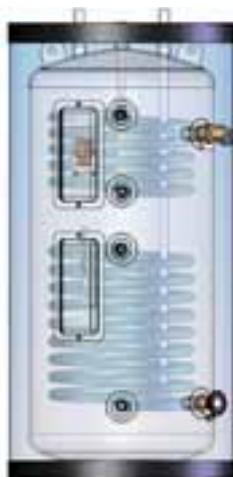
do. This means coming up with a "sequence of operation" and then refining your control and equipment selection based on the priorities required by that sequence.

If you look at Fig. 2, you can start to get the idea. First of all, we have three different water temperatures to deal with, and we have to work out details such as how to supply high temperatures to the fan coil without overheating the floor.

In my illustration, I show a motorized three-way mixing valve that will supply cooler water to the floor while the boiler operates simultaneously at higher temperatures. Our choices are to supply an independent control for the floor heating system, ensuring that it will work in concert with the boiler control or supply an integrated control system that will look after both jobs.

## Solar indirect tank

Heat Transfer Products Inc. recently unveiled its SuperStor Contender Solar line of glass-lined indirect water heaters, designed specifically for solar thermal applications.



The solar-powered enamel heat exchanger is positioned at the bottom of its glass lined storage tank while the back-up heat source, either a heat exchanger or an electric element, is located in the top half. A thermostat maintains a pre-set water temperature. Two inches of non-CFC polyurethane foam insulation keep tank heat loss to less than a half-degree per hour.

**Heat Transfer Products Inc.** **Circle no. 304**

## High efficiency DHW

The A. O. Smith Vertex has become the water heater of choice for the hit TV show 'Extreme Makeover: Home Edition.' Little wonder as this 76,000 Btu/h power-vent residential gas water heater achieves 90 percent thermal efficiency. It combines higher input with more efficient combustion to produce more hot water with lower operating costs. Developed as part of a U.S. Department of Energy (DOE) program, it deliv-



ers an estimated 127-gallon first hour delivery and 93 GPH recovery, rivaling the hot water capability of a conventional 75-gallon tank-type unit. The height, diameter and placement of water and gas connections are identical to standard gas 40 or 50-gallon units. Venting is vertical or sidewall with two, three or four-inch PVC pipe. Side-mounted hot and cold recirculating taps allow the Vertex to be installed as part of a combination space heating/water heating application.

**A.O. Smith** **Circle no. 305**

## Condensing wall-mount boiler

The 96 percent efficient Prestige fully condensing stainless steel wall-mount boiler from Triangle Tube features a microprocessor electronic control that automatically adjusts blower speed and gas flow rate to modulate the boiler firing rate to closely match output to demand. The heart of the boiler is a high-grade 439 stainless steel high water content self-cleaning heat exchanger. It is available in three gas models (110-245 Mbh) and one propane version (100 Mbh) input.

**Triangle Tube** **Circle no. 306**

## Green burners

The Pro-Fire V burner from Cleaver-Brooks offers up to 10:1 turndown on natural gas, as well as the option for sub-30 ppm operation throughout the firing range for commercial/industrial water tube boilers. Available in four sizes from 1.5 MMBtu to 11 MMBtu it shows solid performance at emission levels of less than 30 ppm NOx, and less than 20 ppm NOx on selected applications. It is UL and cUL approved for inputs up to 11.0 MMBtu, and for packaged systems up to 9.0 MMBtu.



**Cleaver-Brooks** **Circle no. 307**

## Enhanced condensing boiler

AERCO International has enhanced its Modulex line of condensing boilers with a boiler communications module (BCM) to support integration with building automation systems. In addition, the line has recently been approved by CSA for propane installations and for breech venting of multiple units through a ceiling or sidewall. Contractors will be able to retrofit existing equipment with the new BCM module and/or convert natural gas units to propane fire operation.

**Aerco International** **Circle no. 308**

## Redesigned water heater

State Water Heaters has redesigned its Select line of compact residential electric water heaters to include additional features, benefits and installation flexibility. Available in sizes from 2.5 to 20 gallons, they are designed to provide smaller amounts of hot water at or near the location where the water is used. The all-new 2.5-gallon unit can be wall-mounted or installed under a sink. The six, 10 or 20-gallon models include side and top water connection options.



**State Water Heaters** **Circle no. 309**

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**WATTS**



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**MASCO** 

# Ventilation

## ASHRAE ventilation manual

A manual to help users navigate the changes in ASHRAE's 2007 ventilation standard is now available. The Standard 62.1-2007 User's Manual provides contractors and engineers with a better understanding of the design, installation and operation requirements in ANSI/ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality. Published last year, the updated standard contains new requirements for separation of environmental tobacco smoke (ETS) spaces from ETS-free spaces, clarification of humidity control design requirements, and the inclusion of new rates for high-rise residential occupancies. Visit [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) for more information.

**ASHRAE**

**Circle no. 310**

## Bathroom vent

Continental Fan's in-ceiling AeroFan is designed to deliver powerful, effective and quiet bathroom ventilation. This



"whisper-quiet" two-speed fan is available in lighted and non-lighted versions. Other features include long-life ball-bearing motor, thermal overload protection and built-in counter-balanced damper. Installation is easy thanks to adjustable mounting brackets.

**Continental Fan**

**Circle no. 311**

## Product Profile

### Fujitsu expands R410A multi-zone AC line

Fujitsu has expanded its Halcyon line of R410A inverter multi-zone air conditioners and heat pumps to offer 41 different combinations. This gives contractors more flexibility to tailor the system to each home or building by mixing components.

Contractors can select either a 24,000 or 36,000 BTU outdoor unit combined with 9,000, 12,000 or 18,000 Btu/h wall-mounted or concealed ceiling indoor units.

Mix-and-match flexibility of evaporator (air handler) type and capacity allows installers to choose the indoor unit that best fits the application.

These high efficiency units, with ratings of up to 16.5 SEER and 9 HSPF, are designed for quiet, reliable operation and sleek design in light commercial, institutional and residential applications.

Standard features include a wireless remote control for the



An expanded line allows contractors to better tailor Fujitsu Halycon AC systems to individual buildings.

wall-mount units and a wired remote control for concealed ceiling units, plasma IAQ filter (wall mount units only), sleep timer, four-event programmable timer, dry mode, auto louver, auto restart/reset mode, quiet mode, auto changeover and efficient operation with low, or high ambient temperatures.

The wall-mount models also feature coil dry mode to help inhibit mold and bacteria growth by reversing the cycle of refrigerant to dry out condensation in the indoor coil without changing room temperature. During dry coil mode the plasma filter operates to help disinfect the coil. This feature is helpful in businesses where a system is shut off for the weekend or a vacation home that may be shut down for the season.

**Fujitsu General America**

**Circle no. 314**

## New commercial filters

3M Technologies has introduced the features of their Filtrete residential furnace filters to the commercial air filter market.



They are designed to reduce energy use (through low airflow

resistance), maintenance and lifecycle costs in traditional ventilation systems. An extended service life requires fewer filter changeouts. Integral seals may help reduce air bypass.

**3M Technologies**

**Circle no. 312**

## Duct flange corners

New Dyn-A-Matic Corners from Hardcast offer universal compatibility with TDC or TDF duct flanges in commercial applications, or with Hardcast's four-bolt

flange and most competitive bolt-on flanges. Designed for manual or automatic corner machine installation, each corner features two pre-punched holes that allow duct sections to be secured with screws so carriage bolt fastening is easy and efficient.

**Hardcast**

**Circle no. 313**

## Company Overview

- Selkirk originally invented the Prefabricated (metal) chimney in Selkirk, Manitoba - 1933.
- Selkirk makes Chimney & Venting products serving the Residential and Commercial/Industrial markets.
- Selkirk serves the Hearth, HVAC & Hardware/Home Centre Distribution Channels with a multi-brand strategy.
- Selkirk operates 3 Ontario manufacturing plants. (Brockville, Nobel and Stoney Creek)

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# Tools & Instruments

## Expanded tube cutter line

RIDGID has expanded its line of plastic tubing cutters with the RC-1625 ratcheting plastic pipe and tubing cutter.



This large capacity tool has an advanced blade design that reduces the required cutting force. With a 1/2" to 1-5/8" O.D. capacity, the RC-1625 ratchet cutter easily cuts plastic pipe and tubing such as PVC and CPVC, as well as PEX, polyethylene, polybutylene and rubber hose.

**RIDGID**

**Circle no. 315**

## Quick pipe thawing

The General Pipe Cleaners Hot-Shot 300 pipe-thawing machine generates 325 amps of power to thaw up to 100 ft. of 1-1/2" pipe. Easy to use, the operator attaches pipe clamps to the frozen pipe



section, plugs the machine into any 115-volt receptacle, and the frozen pipe is thawed in minutes. Standard safety features include a 20-amp circuit breaker and thermal overload protection.

**General Pipe Cleaners** **Circle no. 316**

## A more portable heater

The Pro-Tough series of portable forced air heaters by DESA are easier to maneuver than traditional forced air heaters thanks to a heavy-duty, wheelbarrow-inspired design. They are avail-

## Product Profile

### Upright snip design reduces hand injuries

A U.S. study has concluded that there is a strong connection between the design of hand tools and job site injuries.

"Choice of hand tools may have a substantial impact on the risk of work-related musculoskeletal disorders," reported a study on aviation-type sheet metal snip design funded by the U.S. National Institute For Occupational Safety And Health (published in the February 2007 edition of the *Journal of Occupational and Environmental Hygiene*).

Midwest Tool's Upright Snips were designed based on the results of this study, the company reports. The study found that when cutting curves in sheet metal, the 90-degree offset blades-to-handles design of the Upright Snips was widely preferred by study participants at shoul-

der height and had the greatest impact on reducing physical factors at waist height.

der height and had the greatest impact on reducing physical factors at waist height.

Cutting curves in sheet metal with a regular straight model aviation snip resulted in jagged edges and, the study further noted, "cuts/lacerations are the second most frequent type of injury among sheet metal workers."

Study participants were unionized tradesmen from Sheet Metal Workers Local 91, Rock Island, Illinois.

**Midwest Snips**



**Sheet metal workers found cutting circles with these upright snips considerably easier than with a conventional model.**

**Circle no. 321**

able in 100,000, 150,000 and 200,000 Btu/h models, all with 13.5-gallon fuel tanks. Fuel options include kerosene,



diesel, jet fuel and fuel oil. DESA's major brands are Reddy Heater and Master.

**DESA**

**Circle no. 317**

## Rolling tool storage

The Jobmaster rolling cabinet from Knaack allows full access to both sides and is easy to organize. Shelves are 14-inches deep with a 1-inch hemmed lip, and are welded in place with 12-7/8-inch minimum spacing from the top of the lip to the bottom of the shelf. A ver-



tical storage area features a bracket for hanging extension cords, clothing or tool belts.

**Knaack**

**Circle no. 318**

## Infrared thermometer

The Extech 42515-T Wide-Range InfraRed Thermometer with Type K input and TP200 pipe clamp allows for instant, accurate contact and non-contact readings from -58 to 1472°F (-50 to

800°C) as well as the Type K thermocouple measurements from -58 to 2498°F (-50 to 1370°C). It stores up to 20 readings. Emissivity is manually adjustable, and the bright backlit LCD display provides easy-to-read measurements and programming parameters.

**Extech**

**Circle no. 319**

## Small but powerful

The Milwaukee V18 1/4" Hex Impact Driver delivers 1,400 in/lbs of torque at up to 2,600 rpm in a compact, light-weight package. Features include an all-



metal gear and impact mechanism and a variable speed trigger. A heavy-duty 18-volt lithium-ion battery provides the power while a built-in LED light illuminates dark work spots.

**Milwaukee Electric Tool Corp.** **Circle no. 320**

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**Circle Number 120 for More Information**

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## Product Profile

### A less-expensive option

General Pipe Cleaners has come out with a new gas powered water jet drain machine that is less expensive than other gas jettters with similar performance numbers.

The Model J-2900 features an 11 hp Honda engine driving a 3000-psi, four gpm triplex pump with General's Vibra-pulse on-demand system for getting the hose around tight bends. A 300 ft. capacity hose reel with reel brake and brass swivel is mounted on a heavy-duty handcart type frame with two pneumatic tires. This design is lighter and more maneuverable than other similar-sized machines, the manufacturer reports.

Safety features include a thermal relief valve to protect the pump from heat damage, along with a backflow check valve and inlet filter.

**General Pipe Cleaners**



**The new General J-2900 offers a powerful but less expensive option in gas jettters.**

**Circle no. 322**

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Circle Number 121 for More Information

# Refrigeration

## Compressor failures, Part IV

# Undersized wiring and compressor operation

Poor electrical work can be responsible for motor problems

By E.P. (Ed) Gravelle



**I**t normally is the electrical contractor's responsibility to properly size motor leads for the electrical load and distance, but the refrigeration contractor should be aware of the needs of his motor as improper wire sizes may lead to motor failures and cost him money.

The greatest stress on a motor winding is at the moment of start when lock rotor amps flow. Voltage to the motor terminals plays an important part in controlling lock rotor currents and motor heat. Any weaknesses in the motor winding are most likely to show up at the instant of start, rather than after the motor speeds up. Current draw (in amps) creates heat. The higher the current draw the more heat is generated. High heat during start as well as running can lead to motor winding failure.

For motors to develop the starting torque needed to accelerate under load they must have the voltage they were designed for at the motor. In other words, they must have adequate line voltage. If the demand for starting power isn't met due to low voltage, more amps will be required to create the needed magnetic field in the motor.

### Motor startup

An induction alternating current motor, upon starting, goes through three stages:

1. The motor draws lock rotor current.
2. The motor has to create a rotation magnetic field.
3. The motor accelerates to near the speed of the rotating magnetic field.

**Locked rotor current:** When voltage is applied to the motor stator windings, and the rotor is standing still, the current flow (amps) at the moment of start can be six to seven times the name-plate rating of the motor. The iron core is quickly magnetized and a rotating magnetic field is created.

motor has little if any magnet field. A magnet field is created in the stator (stationary part of a motor) by the initial inrush of energy provided by the power supply. As the magnetic strength builds up in the stator, a magnet field is created and builds up a magnetic force that opposes the flow of electrical power. This is called 'back electro motive force (BEMF).' The motor windings in the stator act like a winding of a transformer; they magnetize the iron core in the stator.

The insulated copper wire in the stator is wound to create poles. Each magnet pole is wound in an opposite direction to the other, creating oppo-

of their equipment, followed by the words 'circuit ampacity.' Circuit ampacity refers to the amperage and voltage carrying capacity of the entire circuit from the breaker panel to the actual motor.

Table D12 of the Canadian Electrical Code does not show circuit ampacity, but rather the minimum wire and breaker (or fuse) to use for various motor loads. The length of the conductors must be considered along with wire sizes shown in Table 12 and read in conjunction with table D3 to choose the right wire size for amp load, voltage maintenance and distance from the distribution panel.

### Long conductor runs

Wire sizing, especially on longer runs, should be based on the correction factors in Table D3 and on short runs more on the breaker size rather than the FL Amps of the motor. For example, wire size for 16 amp motor current draw is shown in the code book as #12 AWG. The compressor manufacturer will recommend a 30 or 40 amp breaker. Lengths longer than 25 feet should be sized up from 12-gauge wire to 10-gauge, up to 50 feet to 8-gauge, etc. This is something that should be looked at, especially on rooftop applications when the breaker panel isn't nearby.

When in doubt, especially after a hermetic motor failure, check the wire size, length and voltage drop on start, especially on units with two or more compressors. When a second compressor starts the conductors are already loaded with the first stage compressor and fans. The second stage start may be starting with 60 percent of the conductor capacity already used up.

### Contactors

Contactors should be inspected for contact (burning), especially after a failure. The manufacturer's literature may state that the nominal horsepower rating is five hp. However, the motor may be built with a 130 percent service factor, making it closer to six hp. A contactor, if selected for five hp, may be only marginally sized for the hermetic motor. When selecting or replacing contactors, they may be sized up for this reason.

*Ed Gravelle is a former contractor (Coast Refrigeration) and consultant on refrigeration, air conditioning and heating systems based in Brentwood Bay, B.C. He can be reached at epgco.08@shaw.ca.*

The second stage start may be starting with 60 percent of the conductor capacity already used up.

**The rotating magnetic field:** The nature of 60-cycle power when applied to a four-pole motor creates a magnet field rotating at 1800 RPM, or 3600 RPM on a two-pole motor.

Prior to starting, an induction AC

site polarity poles. A four-pole motor, while running, will have two north (N) and two south (S) poles. The effect of 60-cycle power will result in the polarity of the poles changing back and forth from N to S – at a rate 7200 hundred times a second per pole (or 1800 times a minute for a four-pole motor and 3600 times a minute for a 3600 RPM motor). The result is a shift of the polarity with each reverse of the 60-cycle power.

**Accelerating to the speed of rotating magnetic field:** The rotor also has a winding in it, but rather than the fine wires of the stator, it has heavy copper bars, joined together to carry magnetizing currents within the rotor. The rotating field in the stator induces a current flow to the rotor, creating a similar four-pole magnetic field in the rotor. The magnetic field created in the rotor is attracted to the rotating stator magnet field and the rotor will accelerate to follow the rotating magnetic field of the stator.

The rotor doesn't quite reach the speed of rotating magnetic field in the stator as there has to be a difference in speed for the bars of the rotor to have current induced to create a magnetic field. Thus we see the motor rated speed at 1725 to 1750 RPM or 3450 to 3500 RPM. The difference is the slip factor.

### Circuit ampacity

Manufacturers list the full load rating

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# Pipes, Valves & Fittings

## Pro-Press for tight areas

New RIDGID ProPress Rings allow users to press connections in less accessible areas than with other existing jaw



sets. Available in six sizes from 1/2" to 2", they feature swivel actuators with 180-degree rotation that permit the tool to connect to the ring at almost any angle.

angle. Also available are ProPress XL Rings for pressing bronze fittings, and XL-C Rings for pressing copper fittings, both of which have a 2-1/2" to 4" capacity.

RIDGID

Circle no. 323

## Magnetic sludge remover

The new JUDO FerroClean Sludge Separator removes all iron sludge (magnetite) that occurs in closed-loop heating and cooling systems, as well as unwanted oxygen via an integrated magnesium anode. It can be



used inline (full flow) or as a side-stream application. The iron sludge (magnetite) is retained within the FerroClean and is removed by simply flushing it out periodically.

JUDO Water Treatment

Circle no. 324

## Tempered hot water

The Symmons' Max Line ASSE 1070



device is designed for applications where the temperature of generated hot water must be tempered and controlled before distribution. Water must com-

pletely pass over the thermal motor before discharge, ensuring that delivery temperature will be maintained even with water flow far below the rated capacity.

Dobbin Sales

Circle no. 325

## Heavy-duty check valve

The new heavy duty 12" Model 80DIX check valve (NPT female connection) from Danfoss is designed for larger submersible pumps for well water, irrigation public and booster systems. This valve features a double-guided poppet,



with a ductile iron body and has anti-poppet spin lugs with stainless steel fasteners. It is designed for vertical or horizontal applications and can be installed with an optional breakoff plug for draining the riser pipe.

Danfoss Flomatic Corp.

Circle no. 326

## Making pipes beautiful

Alvin Products Lab-Metal Repair and Patching Compound is designed for use where pipes and fittings have to be



cleaned up for painting or powder coating for high-visibility areas. It is a metal filler that repairs dents and voids, smoothes weld beads, and hides cracks and other surface blemishes or imperfections on cast or stamped metal parts.

Alvin Products

Circle no. 327

## Flood protection

The Floodsafe from Watts protects the home from flooding due to a leaking water heater. When it detects water under the heater it automatically shuts off the water supply. It is reset once the problem is repaired. Wiring is simple with thermostat wire and a low-voltage power unit that plugs into a standard 110V outlet. There are contacts for monitored alarm connection fittings. Models are available for gas, electric and oil-fired DHW tanks.

Watts Industries

Circle no. 328



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GRUNDFOS

Circle Number 124 for More Information

# Faucets & Fixtures

## Water miser toilet

Gerber Ultra Flush toilets are about 20 percent more water efficient than standard lowflush models. A powerful, yet quiet pressure-assist flush utilizes compressed air to force 1.6 gallons of waste out with 1.1 gallons of water, reports the manufacturer. These versatile toilets are available in a variety of configurations including multiple-bowl shapes and rough-in dimensions to fit nearly any application.

**Gerber**

**Circle no. 329**

## High style in the lav

The Santiago Bath Collection from Price Pfister promises to enhance the décor of almost any stylish bathroom



with its traditional styling and distinctive accents. This new family of faucets is available in Tuscan bronze, chrome, and satin nickel. Tuscan Bronze is an aged and weathered dark bronze, approaching black in appearance.

**Price Pfister**

**Circle no. 330**

## Back in black

Moen's new Medora kitchen pullout faucet features a sleek, high-arc silhouette and soft modern styling. Available in a single-hole mount, it blends beautifully into granite and other solid-surface countertops. A single



**Brushed nickel on the tub.**

reducing the water flow. Moen's flow-optimized aerators flow 1.5 gallons per minute versus the traditional 2.2 gpm. This results in a 30 percent reduction in water use, but the biggest challenge was to achieve that without any noticeable change to the user, reported Tim McDonough, vice president, wholesale marketing and brand development, Moen Inc., Oakville, Ont. Much of the testing involved having real people using the faucets, taking showers, etc. In fact, Moen uses anthropologists to study people's bathing habits.

"The aerator will not cause any noticeable change to the traditional water pressure and flow...so homeowners will still be able to conduct their normal bathroom activities, such as washing their face, brushing their teeth, etc. – while saving water," added Jerry Capasso, Moen's U.S. wholesale bath product manager.

lever handle ergonomically designed pullout wand makes it easy to use. With the touch of a button, users can switch between several water flow patterns. Finish options are matte black, chrome and LifeShine stainless.

**Moen Inc.**

**Circle no. 331**

## Interior Design Show marks ten years

Canada's equivalent to the U.S. Kitchen and Bath Industry Show (KBIS) is marking its tenth year in Toronto this year. The Interior Design Show (IDS2008) will take place Feb. 21-24 at the Direct Energy Centre at Exhibition Place in Toronto.

Unlike the CMX-CIPHEX show that also takes place in Toronto (March 27-29), IDS is not specifically geared to the mechanical contractor. However, there are a number of useful features for those involved in high-end plumbing in custom homes and commercial buildings. Plumbing manufacturers often use the IDS show for major Canadian product launches.

A "star-studded" lineup of keynote speakers – all designers – includes 28 : "Belgian trailblazer Arne Quinze, British sensation Tom Dixon, New York's avant-garde architect Winka Dubbeldam, and Larry Laslo, constructor of timeless interior landscapes."

Friday, Feb. 22, is Professional Trade Day and offers a number of trade-oriented seminars. Quinze, Dixon and Dubbeldam will share their visions for the future in Trade Talks. There will be a seminar on residential green building practices. A number of top plumbing company executives will be on hand.

For more information, visit [www.interiordesignshow.com](http://www.interiordesignshow.com), call (416) 599-3222 or e-mail [info@interiordesignshow.com](mailto:info@interiordesignshow.com).

## Product Profile

### Cottage-style collection qualifies for LEED

The new "cottage-style" Rothbury Collection from Moen is the first to offer the company's new flow-optimized aerators, making it a legitimate "green" product that qualifies for Leadership in Energy and Environmental Design (LEED) points.

However, reducing the water flow in a faucet or showerhead is much more complicated than simply, well,



**Brushed nickel on the tub.**

reducing the water flow. Moen's flow-optimized aerators flow 1.5 gallons per minute versus the traditional 2.2 gpm. This results in a 30 percent reduction in water use, but the biggest challenge was to achieve that without any noticeable change to the user, reported Tim McDonough, vice president, wholesale marketing and brand development, Moen Inc., Oakville, Ont. Much of the testing involved having real people using the faucets, taking showers, etc. In fact, Moen uses anthropologists to study people's bathing habits.

"The aerator will not cause any noticeable change to the traditional water pressure and flow...so homeowners will still be able to conduct their normal bathroom activities, such as washing their face, brushing their teeth, etc. – while saving water," added Jerry Capasso, Moen's U.S. wholesale bath product manager.

## Solid as stone

Many architects, designers and homeowners are turning to the natural beauty of granite as the material of choice for modern-day countertops. Elkay



introduced its Gourmet egranite silica and acrylic resin-formed sinks to complement the look. New finish options include Antique Copper and Hammered, in addition to black, white and biscuit. The sink color is drawn through the entire sink so the vibrancy will not fade.

**Elkay**

**Circle no. 332**

## Hospital hand shower

The SaniShower from the Component



**A classic look for the lavatory.**

The new aerator offers other advantages too. "Our new water saving aerator provides more consistent water flow across a wide range of pressures," explained Capasso. "This means a condo owner in a high-rise building will receive the same, consistent water flow as a homeowner in a newly constructed neighborhood, or even a century home."

While the water conservation technology is virtually invisible, the homeowner will be drawn by the look. "In designing the Rothbury Collection, we paid particular attention to the details," said Capasso. "Homeowners will notice fine points such as the common lines across the handles, lift rod and faucet spout...the hidden aerator, the symmetry around the faucet hub and bases...and the rectangular trim detail around the faucet's spout. It's these details that make the collection one of Moen's finest."

The collection features a full bath suite of faucets, showerheads and accessories. This includes a two-handle centreset faucet, two-handle widespread faucet, and a Roman tub faucet available with three or four-hole diverter options. Complementary bath accessories are available, including a pivoting paper holder, tank lever, glass shelf, robe hook, towel ring, 18 and 24-inch towel bars and a double towel bar. The Rothbury suite features tub/shower, shower-only and valve-only trim options to be used with Moen's Posi-Temp and Moentrol valves.

Moen's innovative M\*PACT valve system, which makes it easy to upgrade the style of the bath without replacing any faucet plumbing, is available on a number of Rothbury products. Colour options include chrome, LifeShine brushed nickel, antique bronze and oil rubbed bronze.

**Moen Inc.**

**Circle no. 335**

Hardware Group (CHG) is designed for use in hospitals and other residential care facilities. Featuring the company's SANIGUARD antimicrobial technology, it was developed in consultation with infection control practitioners. It provides a gentle spray pattern that is ideal for use in burn wards, has an eco-friendly 2.0 gpm water consumption rate and can easily retrofit to most existing hand showers.

**Component Hardware Group** **Circle no. 333**

## Plumbed coffee system

The Brew Express from Integrated Appliances is a built-in, fully plumbed coffee system that brews coffee at the optimum temperature. This twelve-cup

design mounts within the wall atop a counter, saving counter space, and rather than monopolizing an electrical outlet, it actually adds two. Because it is plumbed directly to a water supply (whose quality can also be improved by different filtration systems) it also eliminates the need for refilling.

**Integrated Appliances** **Circle no. 334**



# Trucks for the Trade

# The new pickups

*Big changes in 2007 lead to steady refinement for 2008*

By Simon Blake

This might be the year for those contractors who don't like to buy new things in the first year to buy a new pickup truck. After a number of manufacturers completely redesigned their offerings in 2007, the 2008 models offer a number of useful features but no radical changes.

One of the most important improvements has little to do with the manufacturers. The strong Canadian dollar has resulted in a price reduction on many models. Toyota, for example, is offering \$1,825 off the 2007 list price for its 2008 Tundra full-sized pickup.

## Cargo management

Ford's popular F-series is celebrating 60 years of production this year. The F-150 (1/2 ton) and Super Duty 250, 350 and the new 450 offer a number of new features for 2008. All are available with Ford's new factory installed cargo management system for organizing tools and supplies in the pickup bed. It fits the 6-1/2 ft. (two metre) Styleside box. The basic system consists of two extruded aluminum double-channel side rails, a pair of bins, a pair of crossbars and a header bar. Extra bins and crossbars can easily be added.

The rails have cleat positions every 3-1/2 inches (90 mm) to tie down cargo. Each cleat can support 600 lbs. Aluminum crossbars hold up to 100 lbs. for hanging non-conventional loads like shovels, pipe and, well, fishing poles.

The tool bins feature water-tight double-wall plastic construction and are designed to hold 60 lbs. each. (Throw in a bag of ice and they make a great cooler!)

Another interesting new feature from Ford is a rearview camera system to enhance visibility while backing up. Mounted in the tailgate handle bezel, the camera is activated when the vehicle is shifted into reverse. The video image is displayed on the self-dimming rearview mirror. This is particularly useful when backing up a trailer.

Other new features for 2008 include a standard tachometer on manual transmission F-150 XL and STX half-tones,

manual telescoping trailer tow mirrors on F-150 XLT and Lariat, optional Power Code remote start system and a tire pressure monitoring system with the Heavy Duty package.

Tow ratings range from up to 11,000 lbs. on the F-150 to 24,000 lbs. on the new F-450 Super Duty pickup. Payloads range from up to 3,050 lbs. on the F-150 to 6,000 lbs. plus on the F-450.

There are numerous engine options, from a 4.2-litre V-6 to the 5.4-litre 300 hp Triton V-8. The most powerful gasoline engine is the 362 hp 6.8-litre (415 cu. in.) Triton V-10. The company has introduced an all-new 350 hp 6.4-litre Power Stroke diesel that features Ford's Clean Diesel Technology for clean quiet operation. Transmission choices include five and six-speed automatics, as well as a six-speed manual with overdrive for the diesel.

## More power

Chrysler has added a new 4.7-litre 310 hp V-8 on its Dodge Ram 1500 half-ton. The new engine offers more power and torque with improved fuel economy and smoother operation. This engine is a flexible fuel unit, operating on either gasoline or E85 ethanol fuel. It is standard on four-wheel-drive models and available as an option on two-wheel-drive trucks, where the 3.7 litre Magnum V-6 remains standard, connected to a four-speed automatic or six-speed manual transmission.

All trucks are also available with the 345 hp 5.7-litre Hemi introduced in 2006. This engine features Chrysler's cylinder deactivation system that switches the motor from eight cylinders to four cylinders when in the fuel conservation mode.

Also new for 2008, 4WD trucks are equipped with a front-axle disconnect system that disconnects the front drive-



**The old and the new – Ford's F-Series marks 60 years of production.**

shaft when operating in 2WD mode, saving fuel and reducing drivetrain wear.

As well, a new seven by 10-inch trailer tow mirror is standard on the RAM 2500 pickups for 2008.

(Editor's note: Just as we were going to press, Chrysler launched its completely redesigned 2009 Dodge pickups. Watch for a review of those models in the next issue!)

## Beefed up

The Chevrolet Silverado 1500 (1/2-ton) and GMC Sierra 1500 were re-designed in 2007 with a stronger frame that allows a higher payload (980 kg/2,160 lbs.) and higher towing capacity (4,763 kg/10,500 lbs.), along with numerous other upgrades.

Not surprisingly, the changes are relatively minor for 2008 with features like standard XM satellite radio, power adjustable driver seat option, and an integrated trailer brake controller, previously only available on heavy-duty models.

Speaking of which, the 2500 (3/4-ton) and 3500 (1-ton) models receive

the same upgrades along with larger 17-inch wheels on the dually models. Regular, extended and crew cab two and four-wheel-drive versions are available.



**Ford offers a new system for organizing cargo.**

GM offers numerous engine choices from a 4.3-litre 195 hp V-6 to a 6.2 litre 403 hp aluminum block V-8. Transmissions range from a four-speed automatic to a six-speed automatic with two overdrive ratios.

Toyota also redesigned its full-sized Tundra pickup from the wheels up in 2007. Here again, there is little change for 2008.

Extendable towing mirrors will be standard on some models this year. Available in two and four-wheel-drive with standard, double or spacious

"Crewmax" cabs, useful standard features include accessory power outlets, Class IV weight distribution trailer hitch with four and seven-pin wiring harnesses and electronic trailer brake control connector, heated and foldable exterior mirrors and a removable locking tailgate.

All models benefit from traction control, a useful feature when running light on winter roads.

There are two engine options, both V-8s with overhead



**GMC and Chevrolet pickups underwent a redesign in 2007.**



**Toyota continues to make inroads in the full-size pickup market with its Tundra.**

cams and 32 valves. The first is a 276 hp 4.7 litre unit mated to a five-speed automatic transmission with overdrive. The second is a 5.7 litre V-8 that generates a '70s muscle car-like 381 hp. It is mated to a six-speed automatic with overdrive.

The Nissan Titan full-sized pickup will be available in a new long-wheel-



**Is the end near for the long-running Mazda B-3000 and its sister truck, the Ford Ranger?**

base version for 2008. This allows a seven-foot bed with the crew cab and a full eight feet with the King Cab. Other 2008 enhancements include Bluetooth hands-free phone system and Satellite XM radio.

The Titan's aluminum 5.6-litre V-8 was upgraded in 2007 to produce 317 horsepower. It is mated to a five-speed automatic transmission.

For 2008, four-wheel-drive models adapted an "advance shift-on-the-fly system" with 2WD/4HI/4LO modes.

#### **Smaller pickups**

Small pickups can perform many of the same tasks as a half-ton while using less fuel and being considerably easier to park.

The largest small (actually a midsize) pickup – the Dodge Dakota undergoes a facelift for 2008 with newly styled hood, grille, fenders and headlamps. As well, it is available with the new 4.7-litre V-8 announced for the larger trucks.

A protective surface has been added to the top of the cargo box rails. New built-in cargo box utility rails will likely prove a useful feature for contractors.

Toyota offers its popular Tacoma model in seven different models and two basic cab styles – the Access cab (an extended cab) and the double cab. There are two engine options: a 159 hp 2.9-litre four cylinder and a four-litre 236 hp six. Transmissions are five and six-speed manual or four and five-speed automatics.

General Motors will make minimal changes to its Chevrolet Colorado and GMC Canyon pickups after 2007, a year that saw two new engines and many other updates. The base engine is a 185 hp 2.9-litre four-cylinder unit, with a 242 hp 3.7 litre five cylinder engine available as an option.

The Ford Ranger and Mazda B-Series, which are both manufactured at Ford's Twin Cities plant in Minnesota and are essentially identical under the skin, feature longer 12,000 km service intervals in 2008.

They are available in conventional cab and two and four-door Supercab configurations. The standard motor is a 143 hp 2.3-litre Mazda-designed four

cylinder with three and four-litre V-6 options at 148 and 207 hp respectively.

The transmission is either a five-speed manual or automatic. Four-wheel drive models feature shift-on-the-fly technology.

According to Driving News ([www.carpages.ca](http://www.carpages.ca)), Ford plans to abandon the small truck market when it closes its Twin Cities plant in 2009 along with the Cleveland, Ohio plant that manufactures the engines.

Both trucks have been steady sellers for the two manufacturers over the years. The long-standing



**The Dodge Dakota receives a facelift for 2008.**

relationship between the two companies began in the early 90s when Ford

purchased a 33 percent stake in Mazda, something it retains to this day.

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Circle Number 125 for More Information

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# E-Business

## Moen to launch Canadian web site

Moen Inc., Oakville, Ont., will launch a dedicated Canadian web site. Set to go live during the Interior Design Show in Toronto Feb. 21-24, the new site will feature product photos and information, instruction and data sheets and numerous other details on the company and its products in both English and French. The site will also detail Canada-only product lines, reported Tim McDonough, vice president, wholesale marketing and brand development. Contractors can find the site at [www.moen.ca](http://www.moen.ca). More information on the Interior Design Show can be found at [www.interiordesignshow.com](http://www.interiordesignshow.com).

**Moen Inc.** **Circle no. 336**

## Online refrigerant seminar

Karl Zellmer, vice president of sales for



Emerson Climate Technologies, air conditioning division, shares information with contractors on why accelerating the transition to newer refrigerants is good for business. Topics include current and future legislative trends, HFC refrigerants, R-410A component and system availability, recent contractor/distributor survey data and R-410A training opportunities. The seminar addresses both residential and commercial air conditioning markets. To download the seminar via podcast, go to [EmersonClimate.com/refrigerant/ac](http://EmersonClimate.com/refrigerant/ac).

**Emerson Climate Tech.** **Circle no. 337**

## Selkirk updates site

Selkirk Corporation has redesigned

[www.selkirkcorp.com](http://www.selkirkcorp.com) with both Canadian and U.S. product information, news, product registration and website links. The new Selkirk University online training program and online tools (Chimney Planners, Interactive Installation Guides, Dealer Locator) are among the highlights of the new site. It combines new elements with the best features from [www.selkirkinc.com](http://www.selkirkinc.com) and [www.selkirkcanada.com](http://www.selkirkcanada.com), the company reports.

**Selkirk Canada**

**Circle no. 338**

## Automation software

Reliable Controls has recently released its RC-Archive 2.0 software with a myriad of new features and functions. It is an SQL-based data acquisition application used to create long-term trend logs archived from multiple buildings. End-users can quickly gain access to numer-



ous trend logs recorded from multiple buildings, automatically polled using Ethernet (IP) communications. Alarm messages can be automatically emailed to communicate server status.

**Reliable Controls**

**Circle no. 339**

## Greenhouse gas partnership

ESS of Tempe, Ariz. and Carbonetworks of Victoria, B.C. have joined forces to offer a streamlined way to collect and monitor greenhouse gas emissions. Companies will be able to view their emissions in a business context – seeing the value of their carbon balance sheet and using that data to make informed business decisions today and in the future. ESS provides environmental, health and safety (EH&S) and crisis management software. Carbonetworks provides enterprise software that helps companies create effective greenhouse gas (GHG) emissions strategies.

**Carbonetworks**

**Circle no. 340**

## LEED design

Engineers used Flomerics' Flovent computational fluid dynamics (CFD) software to verify the design of the first university residence hall in Illinois to obtain a Certified Gold Level rating under the Leadership in Energy & Environmental Design (LEED) green building



system. They used the relatively new displacement ventilation approach in their mechanical design of Saint Xavier University's new \$9 million, 37,000 square foot Arthur Rubloff Hall in order to reduce energy consumption. Visit <http://www.flovent.com> for more information.

**Flomerics**

**Circle no. 341**

## Gas detection online

Industrial Scientific Corporation, a manufacturer of gas detection and monitoring instruments, systems and related services, has announced the launch of a new website. [www.indsci.com](http://www.indsci.com) guides users



through a complete gas detection online resource center, providing information about products and services, online training, and detailed technical information.

**Industrial Scientific**

**Circle no. 342**

# Win a BIG Flat Screen LCD TV

plus thousands of dollars in prizes with Plumbing & HVAC's Show Guide for  
**CMX/CIPHEX**

Metro Toronto Convention Centre, North Building

**March 27, 28, 29 2008**

Pick up your Show Guide at registration,  
visit the participating booths and WIN!

**Plumbing  
& HVAC**

Circle Number 126 for More Information

## Coming Events

# Canada's largest mechanical show returns to Toronto

*CMX-CIPHEX will highlight green technologies, practices*

There has probably never been a more interesting time to be in the plumbing and/or HVACR business. The move to products that use less water, less energy and are economical to manufacture and install is driving change in the industry like never before. As well, alternate technologies like geothermal, solar and photovoltaic are pushing into the mainstream.

This tidal wave of new products, technologies and practices will make this year's edition of the CMX-CIPHEX National Trade Show and Learning Forum a truly larger than life event. It will take place March 27-29 at the Metro Toronto Convention Centre.

Over 500 exhibitors will display the latest technologies in heating, hydronic heating, plumbing, piping, valves, drain cleaning, ventilation, air conditioning, kitchen and bath, refrigeration, tools and software.

"You'll be connecting with your peers in the industry, more than 13,000 of them..."

### Learning forum

As well, organizers will offer an extensive seminar program, included in the admission price, designed to guide contractors through the maize of new technologies, codes and other issues. Over 30 sessions are planned.

Featured speakers include:

- Skip Hayden of Natural Resources Canada will discuss "What makes combustion systems efficient and what doesn't."
- U.S.-based hydronic heating expert Bob 'Hot Rod' Rohr will talk about "Planning and installing systems without losing your cool (or your heat!)" and, in a second seminar, "Simple ways to bring solar into your heating mix."

Standards Authority (TSSA) will outline the code requirements for brazed refrigeration piping systems and will review the CSA B52 mechanical refrigeration code.

- Robert Bean of Healthy Heating will report on indoor air quality in his first session and then talk about HRAI's four-day hydronic heating program in his second.
- A number of interesting panel presentations will be presented, covering topics such as micro-cogeneration, meeting ventilation requirements in Ontario homes, efficient commercial space heating (NRCan).

The entire list, along with a list of exhibitors, will appear in the March issue of *P&HVAC*. A full list of exhibitors and seminars can also be found on the show website at [www.cmx-ciphexshow.com](http://www.cmx-ciphexshow.com).

Of course, trade shows are also a social event, notes show chairman Ed Seaward of Union Gas. "You'll be connecting with your peers in the industry, more than 13,000 of them. It's an opportunity to create new partnerships and forge new alliances."

### Habitat gala evening

The Canadian Institute of Plumbing & Heating (CIPH) will hold a gala evening and auction to raise money for Habitat for Humanity on the eve of the show. The event will take place at the Fairmont Royal York Hotel March 26.



And even test your technical skills.  
(CMX-CIPHEX 2006 photos.)

- The Toronto Chapter of the Canada Green Building Council will give a presentation titled "What you need to know about LEED green building benefits."
- Winnipeg-based HVAC consultant and HRAI SkillTech instructor John Hockman will explain "mechanical ventilation systems that work."
- Thomas Pederson, dean of science and professor of marine geochemistry at the University of Victoria, will speak on "Climate change: where on earth are we going?"
- Emerson Climate Technologies' Dennis Kozina will explain "Smart compressors and controls for refrigeration."
- Zurn's Doug Dyer will report on "Codes and Standards – Backflow prevention."
- Tony Scholl, technical specialist for the Ontario Technical Safety and



A trade show is a wonderful place to speak directly to manufacturers...

Canadian comedian and actor Brent Butt of Corner Gas fame will entertain. Both live and silent auctions will take place. For tickets or further information, call (416) 695-0447 or visit [www.ciph.com](http://www.ciph.com).

Skills Ontario will again hold competitions for apprentices to qualify for Skills Canada. HVACR Heritage Centre Canada ([www.hhc-canada.net](http://www.hhc-canada.net)), a group that preserves the country's HVACR history and honours its pioneers, will be back with its popular display of historic artifacts.



See all sorts of new gadgets ...

Every registered visitor will receive a ballot for the door prize, a full-sized 2008 GM van custom outfitted and ready for work by Farmbro Outfitters.

Emerson Climate Technologies is sponsoring free parking at three lots along Queen's Quay, including an outdoor lot for taller vehicles. Details can be found on the show web site.

The CMX-CIPHEX National Trade Show and Learning Forum is a joint effort of the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) and the Canadian Institute of Plumbing and Heating (CIPH).

For more information, visit the show web site at [www.cmx-ciphexshow.com](http://www.cmx-ciphexshow.com) or call 1-800-282-0003 or (416) 444-5225.

## Calendar

**FEB. 21-24: Interior Design Show,** Direct Energy Centre, Exhibition Place, Toronto. Visit [www.interiordesignshow.com](http://www.interiordesignshow.com).

**FEB. 27 – MARCH 1: Pumper and Cleaner Environmental Expo International**, Kentucky Exposition Centre, Louisville, Kentucky. Call 1-800-257-7222, (715) 546-3346 or visit [www.pumpershow.com](http://www.pumpershow.com).

**FEB. 28-MARCH 1: Hearth, Patio & Barbecue Expo 2008**, Georgia World Congress Centre, Atlanta, Georgia. Call (202) 289-2001 or visit [www.hpbexpo.com](http://www.hpbexpo.com).

**MARCH 2-6: Canadian Construction Association 90th Annual Conference**, Fairmont Empress Hotel, Victoria, B.C. Call (613) 236-9455 or visit [www.cca-acc.com](http://www.cca-acc.com) for more information.

**MARCH 26: CIPH Gala Evening in Support of Habitat for Humanity**, Fairmont Royal York Hotel, Toronto. Call (416) 695-0447 or visit [www.ciph.com](http://www.ciph.com).

**MARCH 27-29: CMX-CIPHEX 2008**, Metro Toronto Convention Centre, Toronto. Call 1-800-282-0003 or (416) 444-5225; visit [www.cmx-ciphexshow.com](http://www.cmx-ciphexshow.com).

**APRIL 10-13: Kitchen/Bath Industry Show & Conference (KBIS 2008)**, McCormick Place, Chicago. Call 1-800-933-8735, (770) 291-5409 or visit [www.kbis.com](http://www.kbis.com).

**MAY 7-8: MEET 2008**, Moncton Coliseum Complex, Moncton, N.B. Call Jeff Lacey at 1-888-454-7469, (506) 658-0018, [www.masterpromotions.ca/meet.asp](http://www.masterpromotions.ca/meet.asp).

**MAY 28-30: OILHEAT 2008**, Brookstreet Hotel, Kanata, Ont. Call 1-800-257-1593 or visit [www.coha.ca](http://www.coha.ca).

# People & Places

## Wilo celebrates 135 years

Pump manufacturer Wilo AG, parent company to Wilo Canada, is celebrating 135 years in business. Louis Opländer founded the company in 1872 at Dortmund, Germany as a factory for copper and brass goods. In 1920, it expanded into heating and plumbing. Today, with 6,000 employees worldwide, Wilo (pronounced 'vee-lo') is the sixth largest pump manufacturer in the world.

The company may have a long history in Europe, but it has come a very long way in just a few years in Canada. Wilo Canada Inc., headquartered in Calgary, was launched in July of 2004, followed by Chicago-based Wilo USA LLC in September, 2004. Since then, it has

gained a significant share of a very competitive market, helped in no small part by its technology and an aggressive marketing campaign.

"We're quite proud of that," remarked Sheldon Schiffner, vice president of sales and marketing for Wilo Canada. "Three years ago, nobody knew who Wilo was."

Much of the company's success can be attributed to a progressive approach to technology. Many years ago Wilo adopted "Pumpen Intelligenz" to describe a customer-focused/application-driven approach for the development of innovative pumps and systems.

It has been responsible for many innovations including the first circula-

tion accelerator in 1928, positive internal cooling for submersible wastewater pumps in the 1950s, the first fully electronic circulating pump in 1988 and a high-efficiency pump for heating, air-conditioning and cooling applications in 2001. Today it is a leader in "smart pump" technology.

Last September Wilo opened a new state-of-the-art manufacturing facility in Thomasville, Georgia to support growing demand, particularly for municipal applications.

The Chicago office was being managed from Canada until January of this year when a new president was appointed for Wilo USA. "We still share a lot of synergies back and forth and there's still a lot of common customers on both sides of the border," noted Schiffner.



Workers assemble pumps in Calgary.

The company shows no sign of slowing its assault. "Our goal is to keep pushing away at market share until we become one of the market leaders within Canada," said Schiffner. "We will do the same in the U.S., letting our technology help us with that charge."

For more information, visit [www.wilo-na.com](http://www.wilo-na.com) or call 1-866-945-6236 (toll free).

## People

**Wilo USA LLC**, Melrose Park, Illinois, has appointed **Michael Easterley** as president and CEO.



**Mike Easterley**

The **Morgan Group**, Markham, Ont., has appointed **Doug Posie** to represent the company in northern Ontario and **Kevin Larouche** for the southwest region.

**Ontor Limited**, Toronto, has named **Greg Willmore** as sales representative for Atlantic Canada.



**Greg Willmore**

**Oakville Stamping & Bending (OS&B)**, Oakville, Ont. has appointed **Kevin Ernst** as general manager.

**Faye Leaper**, accounts supervisor for the **Heating, Refrigeration and Air Conditioning Institute of Canada**, has retired after almost 20 years. **Ann Marie Vianu** has been appointed accounts supervisor and **Michelle Sebastian** has been named accounting assistant.

## Companies

**Rona Inc.**, Boucherville, Que., has purchased **Best-Mar Plumbing & Heating Supplies Inc.** with branches in Cornwall, Brockville and Ottawa, Ont. **Best-Mar** will become part of **Rona's Noble-Trade** wholesale division.

**ITM Instruments Inc.** has opened new offices at 16975 Leslie St., Newmarket, Ont. This new building includes an ex-



tensive showroom, laboratory with six clean rooms for calibration (meeting ISO 17025 standards), and a larger warehouse.

Please see 'Companies' on page 34

**The Canadian Institute of Plumbing & Heating  
L'institut canadien de plomberie et de chauffage  
invites you to attend**

## Fill'er up to \$1.5 million

**A Gala Evening in support of  
Habitat for Humanity Canada**

**With  
Brent Butt  
from**

**Wednesday, March 26, 2008  
Fairmont Royal York Hotel, Toronto**

**Your ticket includes dinner, entertainment and a chance to bid at the live and silent auctions. Black Tie Optional**

The Gala Evening takes place on the eve of CMX-CIPHEX 2008, CIPH's and HRAI's trade show and conference for the air conditioning, heating (forced air and hydronic), hearth, plumbing, piping, refrigeration and ventilation industries. CMX-CIPHEX 2008 takes place March 27, 28 & 29th at the Metro Toronto Convention Centre in Toronto.

The 8th Gala Evening is produced by the Canadian Institute of Plumbing & Heating (CIPH). Registration form on the reverse. Since 1994, CIPH members have contributed more than \$3.5 million in cash and products to Habitat for Humanity Canada.

For more information on CIPH and the Gala Evening, visit [www.ciph.com](http://www.ciph.com).



For information on Habitat for Humanity Canada, visit [www.habitat.ca](http://www.habitat.ca)



Circle Number 127 for More Information

# Mechanical Marketplace

The bulletin board of products, services, professionals, employment opportunities and more for Canada's Mechanical Contracting Industry.

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## Coming in the Next Issue

### Huge CMX-CIPHEX show issue

- Going green on a budget
- Contractors of tomorrow
- Grease duct venting

### Also, don't miss:

- Controls for hybrid hydronics
- Refrigeration troubleshooting
- Products, products, products ...

## Literature Showcase

Following are some of the latest catalogues, manuals, software and product brochures from the industry's leading manufacturers. To receive a copy, please circle the corresponding number on the Reader Service Card in this issue, fill out your contact information, and mail it or fax it to (416) 620-9790.



#### New RIDGID full line product catalogue

Ridgid recently introduced its new full line catalog. The 208-page catalogue, which is now in full color, features new products, expanded product information, product selection charts and helpful tool tips. A visual product index is provided to enhance the overall easy navigation of the catalogue. Call (800) 769-7743, visit [www.ridgid.com](http://www.ridgid.com) or e-mail [info@ridgid.com](mailto:info@ridgid.com)

Ridgid



#### Water conservation brochure

T&S Brass has released its Conservation Energy Efficient Products Brochure. This new guide not only showcases products that use less water, but also shares important information on a variety of compelling environmental topics. These include conserving water through innovation, setting the standard in manufacturing, LEED and the full T&S range of water saving products for the plumbing and food service industries.

T&S Brass

Circle no. 128



Taco has issued its new Hydronic Systems & Components catalogue. It features the full-range of hydronic equipment and accessories for residential and commercial applications. Sections cover circulators, electronic controls, air elimination products, valves and accessories, radiant systems products and water recirculation products. The catalogue also contains information on the newly introduced FloPro contractor development and training program.

Taco Inc.

Circle no. 130



#### Pipe connection catalogue

Victaulic, a manufacturer of mechanical pipe joining systems, has released its new general product catalog with data for all non-fire protection products. It is written as a basic reference guide by product type. It includes three-dimensional diagrams and detailed specification charts and provides many solutions, applications and data on couplings, fittings and valves, the Advanced Groove System, stainless steel piping, plain-end piping systems, HDPE plain-end piping, the Depend-O-Lok® system, grooving tools, piping software, Vic-300 MasterSeal butterfly valve and more.

Victaulic Co. of Canada

Circle no. 131



#### Pocket reference guide

Bradford White has updated its Full Line Pocket Catalogue. The 148-page reference guide details the company's extensive line of residential and commercial water heaters in electric, gas and oil-fired models, as well as Bradford White's tankless, indirect-fired, storage and hydronic heating units.

Bradford White Canada

Circle no. 132



#### Green water heater

Lochinvar has released new literature for its 98 percent thermally efficient ARMOR water heater. The detailed full colour brochure covers the five models of this condensing commercial gas water heater. Inputs range from 150,000 to 500,000 Btu/h. All models feature 5:1 modulating turn-down, enabling it to fire as low as 20 percent and smoothly modulate up to 100 percent on demand. It is equipped with Lochinvar's SMART SYSTEM control, which includes a built-in cascading sequencer for installations using up to eight units.

Lochinvar Corp.

Circle no. 133

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# Shop Management

## No trade background?

The “outsider” faces a different set of challenges

By Ron Coleman



I was recently asked by a contractor if a non-tradesperson could run a HVAC company. I believe the answer depends on the size of the company.

In a larger company there are usually experts in each area of the business; therefore the general manager's skills in running the business are far more important than any technical skills he has. In a small company with only two or three people it would be difficult for the business to support a full-time general manager – therefore the general manager would need some technical understanding of the business. However, my view of a two or three-person firm is that the owner has not created a business; he has bought himself a job. Take the owner out of the business for a week and the sales/billings will likely drop off. In a true business, the operations can continue without the everyday presence of the owner.

I have also found, based on the financial benchmark programs that I have undertaken for the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), that HVAC contractors with sales under \$750,000 usually find it very difficult to make money consistently. The exception is where the contractor is in a very specialized area and can charge premium rates.

Aiming for annual sales of \$1.5 to \$2.5 is likely to be a sustainable operation. The average HVAC contractor in Canada does \$3.3 million in annual sales. At \$1.5 million the company should be able to support an overhead structure that does not require an owner to have a strong technical background.

In the 2007 HRAI Benchmark program we had a group of 22 contractors with sales averaging \$1.4 million, gross profit at 40 percent, overhead at 34 percent and pre-tax profit at six percent. This was the average of contractors with sales under \$2 million and we included an owner/manager salary at \$100,000.

With sales of \$2 million and a gross profit margin of 45 percent a company would have \$900,000 in contribution to overhead and profit. This should be more than adequate to cover overhead of 38 percent and a profit of seven percent of sales.

If I was the owner manager of such a company that did residential service and retrofit, here is what I would do and what I would recommend you should do:

1. Increase gross profit to 50 percent by reducing costs, increasing prices or a combination of both.
2. Budget for \$2 million in sales.
3. Keep overhead under 40 percent of sales and make a 10 percent pre-tax profit. (25 percent of HVAC contractors make more than 10 percent profit).

example, if most jobs have \$1.90 in materials for every \$1 in labour and a specific job has a different ratio you should ask “why”?

8. Share the wealth.
  - a. Implement a profit sharing program that rewards those who exceed expectations.
9. Do regular employee evaluations.
  - a. Always ask employees “what one thing in the company would you change if you had a magic wand?” When they tell you, don’t explain why it can’t be done, do it!
10. Do regular evaluations with customers.
  - a. Have someone phone up every customer after every call and complete a short questionnaire.

Give every technician business cards.

14. Reward your service technicians for generating additional sales
15. Develop sales programs to up-sell your existing customers. If you are servicing their heating system, who is servicing their water tank, gas fireplace, air conditioning or plumbing?
16. Network with other contractors through an association (HRAC/MCA/ClimateCare etc.)

Because I don’t have a technical background, I would be forced to work ON the business instead of IN the business. This would force me to create processes that work and these processes would have to work without me and that’s what a successful business is all about.

Focus on your leadership skills, not on your ability to do the day-to-day operations. Delegate all the everyday activities and you will build a successful business.

I have an accounting practice but I have never learned how to use Quick Books or Simply Accounting. Why? Because I don’t want to become a book-keeper! Hopefully, you did not start your HVAC business to learn how to install a furnace.

Even if you do have a technical background I would recommend you follow this procedure for growing, and managing your business. You can’t provide leadership when you are in the trenches.

Ronald Coleman is a Vancouver-based accountant, management consultant, author and educator specializing in the construction industry. His web site is [www.ronaldcoleman.ca](http://www.ronaldcoleman.ca) and he can be reached by e-mail at [info@ronaldcoleman.ca](mailto:info@ronaldcoleman.ca).

## Delegate all the everyday activities and you will build a successful business.

4. Implement a flat rate pricing system using an hourly rate of at least \$135.
5. Monitor hours paid compared to hours billed for service work.
  - a. Identify all unapplied hours and determine how to minimize them.
6. Track all quoted jobs.
  - a. Compare actual hours to budgeted hours.
  - b. Review actual costs.
7. Review quoted projects before they are submitted.
  - a. Develop a checklist of items that should be included. Watch for the small items that get ignored such as consumables, small tool allowance, clean up, warranty allowance, safety etc. etc.
  - b. Compare the labour to materials by dividing one into the other and see if it is constant. For
8. The owner should meet with at least one good customer every week in person and get some detailed feedback from them.
11. Key performance indicators
  - a. Develop a series of Key Performance Indicators. Use the targets that are appropriate to your business.
  - b. Develop non-financial as well as financial indicators. (Send me an email and I will send you a template for this.)
12. Promote Planned Maintenance
  - a. Develop a strong planned maintenance base. This will allow you to do more work in the shoulder seasons and free up your technicians for the busier times.
13. Ensure that your people are trained in the soft skills of customer service.

## Companies

Continued from page 32

**Selkirk Corp.**, Stoney Creek, Ont., is celebrating 75 years in business. (More on this in the next issue.)

**Distech Controls Inc.**, Brossard, Que. has acquired a majority share in **SystemHouse BV**, based in Amsterdam, the Netherlands, to form Distech Controls Europe BV.

**Johnson Controls**, Milwaukee, Wisconsin, has acquired **Skymark International**, Ajax, Ont.

**Roby Metal 2000**, Saint-Victor, Que., has formed a partnership with **Granby Steel Tanks**, Granby, Que., for the merchandising and sales of the EXACTA product line in Ontario, Quebec, and the Maritimes.

**The Grundfos Group**, Denmark, has acquired the **Peerless Pump Company**, Indianapolis, Indiana.

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